NATURE MAGAZINE

DECEMBER 1924

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THE TREE PLANTING ARMY

If the Nation saves the trees, the trees will save the Nation.
—Charles Lathrop Pack, President, American Tree Association.

Memorial Highways and Roads of Remembrance plans are being pushed in many parts of the country. The systematic planting of trees along the Boston Post Road from the New York State line to New Haven is recommended by P. L. Buttrick, consulting forester of New Haven, in a report to the State Highway Department of Connecticut.

At the direction of H. R. Isherwood, the secretary of the Concatenated Order of Hoo-Hoo, this fraternal organization of lumbermen has a big tree-planting campaign on in towns where the organization has members. The secretary is now making plans to enroll all the tree planters in the tree-planting army.

The Idaho State Federation of Women's Clubs is hearing all about the McNary-Clarke Forestry bill and the need of reforestation through Mrs. L. D. McFarland, secretary of the third district. One of the first requests for the booklet, "If the Nation Saves the Trees the Trees Will Save the Nation," came from Mrs. McFarland to be used in her forestry program for the district.

Education Week during November saw a renewed activity all along the line in forestry matters and in tree planting. Schools were very active in using the booklet that has made such a hit. Several teachers wrote in they wanted to use the booklet in their English classes and thus promote forestry at the same time. A two-cent stamp for postage brings this to clubs, schools and organizations interested. Talk forestry during your winter meetings and carry the message of the trees. Showing the wide interest in the subject and indicating how the members of the tree-planting army are at work, Susie Wyckoff wanted the booklet for her schools at Wellington, Kans.; Mrs. C. C. Blackburn wanted it for club work at Port Arthur, Tex.; Miss A. L. Anderson and Miss Ruth Wendell, of Duluth, wanted it for their school work; libraries are to the front in helping distribute the message of forestry.

On Armistice Day the Women's Auxiliary and the American Legion planted a memorial avenue of oak trees at Winchester, Va. The state president is Mrs. W. A. Baker, while Miss Frances Beverley is the president of the Winchester auxiliary. George Michie, the state commander of the Legion, attended the ceremony.

At Wilmington, Ohio, a memorial tree has been planted for members of the McMillan Post, G. A. R. State Commander Burd dedicated the tree.

At Providence, R. I., planting of memorial trees in conjunction with a similar plan by the Pawtucket Post has been approved by the Walter G. Gatchell Post of the American Legion.

As a memorial to the soldiers of Warren County, Ky., sixty-eight trees will be planted along the Louisville Pike. Julian W. Potter has given the War Mothers' Society of that county the money for planting memorial trees at the Kentucky State Normal School and the Teachers College.

Mrs. Wilbur W. Milar, state chairman of the Ohio Federation of Women's Clubs, has been appointed chairman of the department of applied education of the General Federation by Mrs. John D. Sherman, the new president. This brings to the place held by Mrs. Sherman one of the original members of the tree-planting army. In this department is centered conservation, tree planting, and garden week activities of the General Federation. The tree-planting army extends to the General Federation congratulations on Mrs. Sherman's appointment, for it feels that the educational work within the Federation will go along to the credit of the organization.

The state of Alabama is after the lead in forestation among states in the south. The Alabama Conservation Association and the Alabama Fishermen and Hunter's Association are behind the work. Garrard Harris has written "The Elements of Conservation," which has been adopted by the State Text Book Commission and will be put in the sixth grade schools. Tree planting along the Bankhead National Highway is to be pushed rapidly. Schools of the state are taking up tree planting, too. The most recent to apply for membership in the tree-planting army are Bertha Mae Bishop for the schools at Bishop and V. F. Phillips for the schools at Gallant.

The Gold Star Mothers have planted a memorial tree on the campus of the University of Kentucky at Lexington.

Dedication of the Road of Remembrance in Marinette County, Mich., marked Armistice Day. The Teddy Budlong Post will plant 1,500 trees about fifty feet apart.

The only way to join the American Tree Association is to plant a tree and register it with the Association, 1214 Sixteenth Street N.W., Washington, D. C. The Association will send tree-planting suggestions and a tree-day program for two cents to pay postage. Make your Spring tree-planting plans now.

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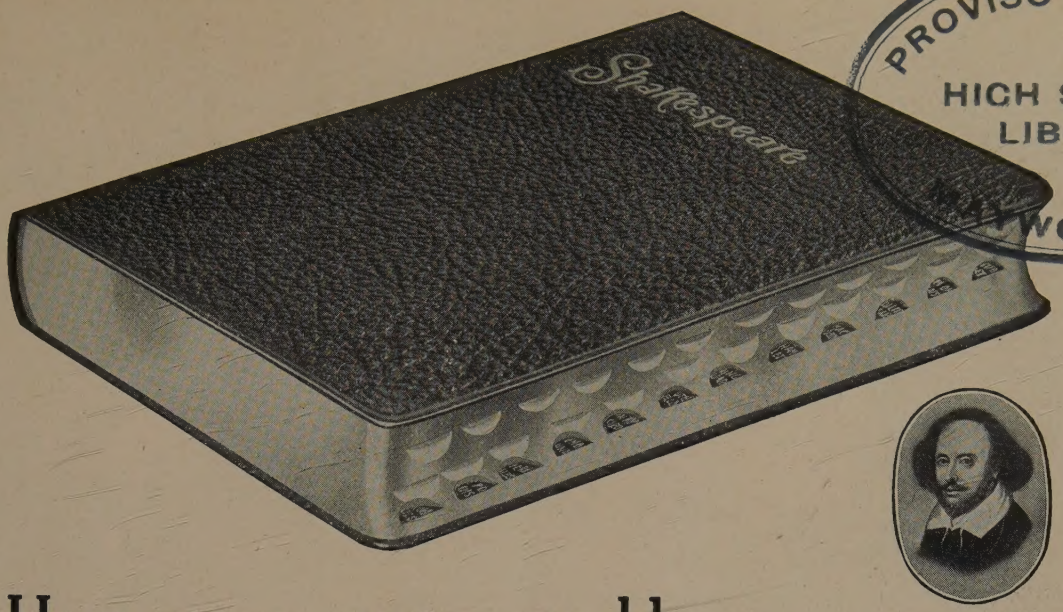

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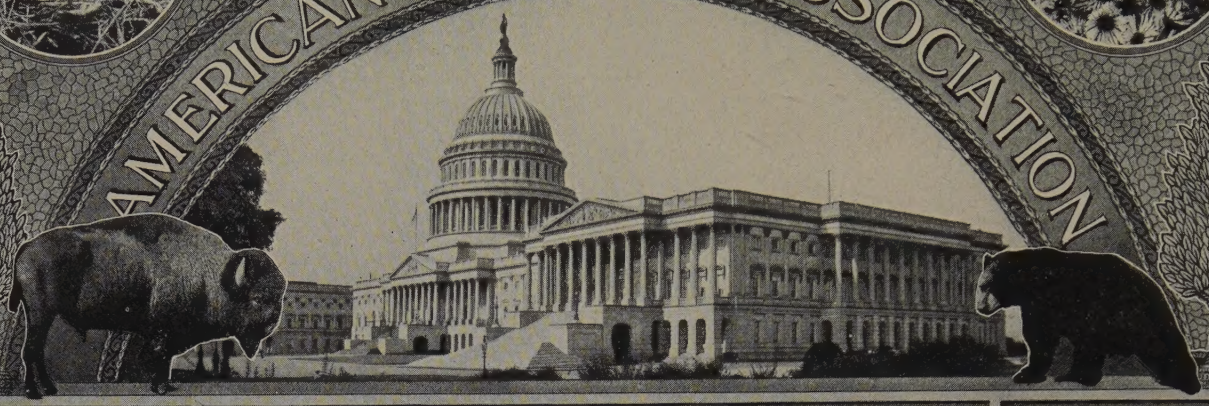

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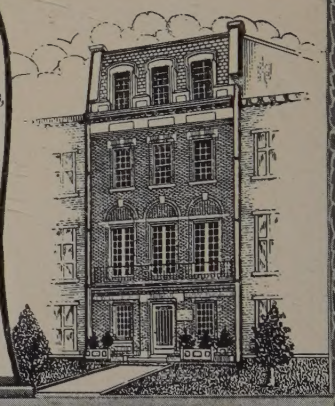

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December

Nature Calendar

DECEMBER

Winter is a beautiful season with Nature reduced to its simplest terms.

Now is the time to study buds; the slender golden brown of the Beech, the soft gray of the Hickory and the flat nose of the Tulip.

Most of the nut-bearing trees of America were probably planted by Gray Squirrels.

"I, singularly moved
To love the lovely that are not loved
Of all the Seasons, most
Love Winter, and to trace
The sense of the Trophonian pallor on her face.
It is not death, but plentitude of peace;
And the dim cloud that does the world enfold
Hath less the character of dark and cold
Than warmth and light asleep,
And correspondent breathing seems to keep
With the infant harvest, breathing soft below
Its eider coverlet of snow."

—From "Winter," by Coventry Patmore.

On Christmas morning take an early walk and make a bird census.

A Cardinal may flash across your path or a Bluejay may call raucously from a nearby tree.

How is your bird lunch counter getting along?

Try exchanging a list of your bird visitors with some friend in another region.

The fruit of the Sumac and Box Elder are awaiting visits of Evening Grosbeaks who a little later will make their annual visits from Canada to northern United States.

Have you noticed the annual rings in the logs you are piling upon the hearth?

Last spring two thrifty Pines were planted on either side of a walk. Children picked all the terminal buds from one of the trees. It is now dead. The other is in perfect condition.

This is the time of year when frogs are in no danger of having palpitations of the heart.

A deep snow heavily crusted may cause the Gray Squirrel to change his diet from one of nuts to one of buds and bark.

Grouse are the berry and bud pickers among birds. A patch of Wintergreen or Partridgeberry often yields them a good meal.

On the other hand, Hawks and Owls are fond of Grouse and the end of a Grouse trail in soft snow with marks of the wings of the Owl or Hawk and a few feathers of the Grouse tells of a tragedy and a delicious meal.

Around this time trout are spawning.

A large percentage of our moths and butterflies winter as chrysalids; a few in the caterpillar stage, and more of them in the egg stage.

With the first snow the insects that have taken shelter under leaves and old logs will burrow deep into the ground.

Flying about in the woods on bright sunny days you may see some Mosquitoes, Dance-flies, Midges, and such butterflies as the Mourning-cloak and Angle-wing which winter in crevices and under loose bark.

The Wingless insects, Thysanura, do not seem to mind the snow and may be found hopping about on its surface. They make up in activity for what they lack in size.

Queen Bumblebees are wintering in last year's nests.

In the early morning Jack Frost's handiwork is at the height of its perfection.

The sun, shining through eddies of soft powdery snow caught up and whirled by December winds, forms a rainbow of many colors.

On some long winter evening read a chapter from Thoreau, Burroughs or John Muir.

Prepared for NATURE MAGAZINE by the Cleveland Museum of Natural History

PAST CHRISTMAS AGE IN THEIR WINTER GLORY

Vol. IV DECEMBER, 1924 No. 6

Are Christmas Trees Wrong?

By RALPH S. HOSMER
Professor of Forestry, Cornell University

ASK THE next dozen or so persons you meet this question: "What do you consider the most characteristic feature of the celebration of Christmas in the home?" Practically everyone will say: "Why, the Christmas tree, of course." And so it is. The custom is so general in every country of Christendom that not only to the children, but to many of their elders as well, a Christmas is not really Christmas if there is not a tree.

How eagerly the kiddies wait for the beautiful Christmas tree, with its gleaming lights, its gay decorations, and at the top the shining star. In some families Santa Claus follows the custom of taking away the ornaments a few days after Christmas, but he always brings the same ones back the next year on Christmas Eve. What a welcome the old favorites get, even when, after many visits to the Northland, the Bird of Paradise returns without his tail. The stockings in the morning are important, but the tree is the crowning feature of Christmas. To see that one is provided is one of the most important duties of the Yuletide. To what better use can a tree be put than to serve to add still more happiness to this glad season?

But to some persons it must seem otherwise, for each year the cry is raised that it is time to stop the waste that is being caused by this custom. It is true that many trees are used for this purpose, probably over five million a year in the United States, for we in this country use more Christmas trees than does any other nation. But what of that? The real question is: Could these five million trees be put to any wiser or better use were they allowed to grow a few years longer? It is significant that one does not hear objections to Christmas trees from the foresters. On the contrary, these men, whose profession it is to manage and protect the forests, assert that the use of Christmas trees is proper and wholly justifiable.

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The United States Forest Service is formally on record that "the custom is so old, so well grounded, and so venerated that even if it were economically somewhat indefensible, these aspects will and should continue to outweigh economic considerations." Interestingly enough, however, economic factors as well as sentiment point to this as "wise use." With several of the species that yield the best Christmas trees, more money can be got by using them for this purpose than for any other. The Christmas tree is a legitimate by-product of the forest.

Practically all American Christmas trees are conifers. In the northeastern states balsam fir is the favorite. This species comes near to being the ideal Christmas tree. When young it is usually symmetrical, with horizontal, spreading branches and fragrant needles that persist longer indoors than do those of most other conifers. Spruce ranks next and serves almost as well. The native red spruce, the introduced Norway spruce and other

species are all to be commended. In the southern states red cedar and scrub pine are esteemed as Christmas trees; in the Rocky Mountain states Douglas fir and Engelmann spruce; and on the Pacific coast incense cedar, white fir and western hemlock. Santa Claus may have a preference, but if so he bows to local availability and empties his pack under whatever kind he finds awaiting him.

For the northeast and even as far south as Washington, the forests of northern New England, northern New York and eastern Canada furnish the supply of Christmas trees. It is a definite seasonal industry. The trees are graded as to size and condition and shipped in carload lots. Wholesale prices are quoted in the market lists. From producer to consumer the trees pass through many hands.

LADEN WITH NATURE'S CHRISTMAS ORNAMENT

Christmas trees on the mountainside, but if judiciously cut, there is no reason why they should not be in the home.

Many towns and cities have in late years taken to decorating well-developed trees in a centrally located park as municipal Christmas trees. Some even construct artificial trees that, when strung with the long lines of brilliantly lighted bulbs, look very much like the real thing. It is a pretty sight from a railroad car window on Christmas Eve to pass through town after town, each with its gaily decorated tree.

And then, too, more and more persons each year are devoting areas of waste and non-agricultural land to the production of Christmas trees from Christmas tree plantations. Here the trees are spaced closely, usually two or three feet apart each way, and grown from eight to ten years. Norway spruce is a good species to use in the northeast. Few families in these days care for trees more than six to eight feet tall, so that a quick rotation is indicated in the management. Under proper conditions these trees grow a foot in length each year. With suitable market facilities, especially when his location is near a town or small city, the owner of such a plantation may reap a very satisfactory financial return from the crop of trees that he harvests each year.

But considering those who object that the use of trees for one day only is a waste, let us look still closer at this Christmas tree business. Five million a year sounds like a lot of trees, but is it? Suppose we figure it in acreage. It is usual to space trees in forest plantations, six by six feet, which makes 1,210 trees to the acre. If five million trees were set out it would require 4,132 acres. As we find them in nature there may not be so many per acre. Suppose we double the acreage and then throw in a little more for good measure, and assume that our cut of five million Christmas trees come from 10,000 acres, all clear cut each year.

The United States Forest Service has recently stated that "our remaining forests of all sorts are being cut at the rate of about 10,000,000 acres a year." Ten thousand is one-tenth of 1 per cent of ten million. Even if it took the clear cutting of that area to furnish us with Christmas trees each year, it would be but an infinitesimal part of our yearly drain on the forest.

As a matter of fact, on most of the land from which spruces and firs are cut, the forest readily replaces itself through natural regeneration. Much of the Christmas tree stock that goes to the Atlantic seaboard cities comes from land that has reverted to forests, or from swampy areas and balsam thickets, or results from the cuttings that farmers make to keep their pastures open for grazing. Frequently the best, often the only, market afforded for the small conifers so removed is as Christmas trees. True conservation of the forest results not from leaving trees to grow old and die, but from their wise use when they are needed, in whatever size, by man. Under proper forest management one crop

A FOOTPATH THROUGH NATURE, CHRISTMAS DRESSED

The tree is the crowning feature of the children's day, and may continue to be without loss to the future forests.

of trees is made to succeed another. This is continuous forest production.

But suppose these spruces and firs were not cut for Christmas trees, what then? When they grow large enough they would probably be felled and made into pulpwood and in due course converted into newsprint paper. It is authoritatively said that it takes an amount of pulpwood approximately equivalent to that grown on 40 acres to print the average Sunday edition of the newspapers in a large city.

When one is told that the cutting of Christmas trees entails waste and injury to our forests, is it not in order to balance the joy and the lasting influence of the Christmas tree as against a page or two of the crude and often brutal comic section of a Sunday supplement?

In Lewis Carroll's book, "Sylvie and Bruno," is a definition of sobriety that may perhaps be applicable in this connection. He says: "Sobriety is a good thing when practiced in moderation, but when carried to an extreme even it has disadvantages. When a man is tipsy (that is one extreme), he sees one thing as two. But when he is extremely sober (the other extreme), he sometimes sees two things as one. Both are equally inconvenient." The conservation of the forest through wise use is one thing, and a very vital one to us in this country today. The attempt to preserve the forest by forbidding the cutting of trees is quite another, and wholly unwarrantable thing. Do not those who decry the use of Christmas trees rather incline to extreme sobriety? The only problem connected with Christmas trees that is worth troubling about is how to make it possible that every family in our broad land shall have its own Christmas tree.

A Reindeer Round-up

By FRANK DUFRESNE
U. S. Biological Survey

ON THE broad flats before us the reindeer had quietly assembled during the night and now, in the first rays of the morning sunshine, there stood a herd of more than ten thousand, spread like a great, black-brown carpet interspersed here and there with tiny, white polka dots of snow-white animals.

Alert and much disturbed, they appeared afraid of their own immense numbers. The gigantic carpet rippled intermittently. It formed into a three-mile circle of wildly milling animals, revolving round and round until it made one dizzy to look. Then a convulsive movement seemed to shake the whole carpet as though some titanic hand had reached down and jerked it sharply. A narrow, weaving ribbon began to unfold as some leader among them dashed headlong away, followed in turn by each member of the entire herd.

Over niggerheaded tundra, where a man would find it difficult to make his way, these wonderful steeds of Santa Claus fame flew with the speed of swallows. Their wide-spreading hoofs bounded from the soft and boggy tundra, resilient as rubber. It was a miraculous thing to witness! To all appearances it simply couldn't be done, yet these graceful animals were doing it, and doing it as easily as a thoroughbred horse speeds down a race course. To them it was a natural, effortless thing to do.

With that whole, immense herd strung out in a charging straight line, twenty or thirty reindeer wide and hundreds long, it seemed no power on earth could stop them. Imagine the fate of a man caught in their path! Startled, we looked. In the very line of their mad flight an Eskimo calmly arose from his seat on a niggerhead. With a wave of his hand turned those hundreds of panicky animals back into a letter "U." In a moment, it seemed, the great carpet again formed and began another long circling round and round to the accompaniment of grunting fawns and heavy breathing parents. The supremacy of man—never was it more vividly shown.

It was the first time in a year that the Buckland River herd had been assembled. All through the previous summer and fall they had ranged unmolested in little bands over an unfenced area of more than a million acres. For weeks not a man had crossed their paths. Small wonder they acted more like wild animals than the domesticated property they were.

They traveled always. They were never stilled except for a couple of hours during the heat of a summer's day. In the winter an abundance of graylichens on the hillsides were theirs for the digging. In the summer the green tundra was a storehouse of

ANTLERED MONARCH OF THE WASTE

(ABOVE) A crown in velvet in silhouette against the hills.

(BELOW) A reindeer train, perhaps a part of the Santa Claus caravan.

good things for them. They waxed fat on grasses and sedges. The millions of pink-topped mushrooms furnished them dessert, and they relished occasionally a setting of eggs from neighboring ptarmigan, duck, or goose.

Queer tales are told of their variable appetites! One morning I watched an old female steal up to an Eskimo fish rack near the river and help herself to a mess of half-dried salmon. Another time a pair of fawns found the discarded seal skin trousers of their native owner and proceeded industriously to munch away on them, one to a leg. A tug-of-war resulted in which the trousers parted company in the middle. Reindeer are passionately fond of salt. One of the strongest, if not the strongest, ties between reindeer and man is man's ability to satisfy this craving. A natural salt lick is a Mecca for them and lacking it they often gather at the seashore to pick up seaweeds or bits of salt-encrusted wood.

Buckland River, the scene of our round-up, lies just south of the Arctic circle at the head of Kotzebue Sound, Alaska. For two weeks before we came from Nome, the Eskimo and Lapp herders had been combing the hills, routing out band after band of reindeer. The very night we landed to pitch camp they brought the reindeer in to us. In the purple twilight we dropped off asleep with only the twittering of many small birds and the occasional weird laugh of the Pacific loon to break the silence. In the morning the air and tundra vibrated to the thousands of hoofs. The reindeer had come.

The flats of Buckland River extend out from the mainland like a bottle's neck, making the gathering of the animals comparatively easy. Immediately the deer crossed the narrow neck of land a wire fence, already prepared, was raised behind and cut off their escape. The work of the herders then was to prevent the reindeer, in their mad rushes, breaking the fences. Our white tents also helped to keep the deer at a distance.

Cunningly concealed over the brow of a hill was a corral of spruce brought from far up the river. When everything was ready several of us lined up holding at intervals to a long strip of burlap cloth which we used as an animated fence cutting out two or three hundred from the main herd and rushing them into this corral. From here they dribbled outward through chutes to the handlers, and there the fun really began—the center of the stage. Here the owners, fifty Eskimos and two or three white men, waited to greet their property and make sure of their percentage in the allotment of fawns.

The native method of marking reindeer is by notches and slices on the ears. Imagine fifty shapes and combinations of such notches being distinct and different enough to settle a question of ownership! "Surely I will see some lively scrapping here,"

A NOONDAY SIESTA IN ALASKAN SNOW

Denizens of the northland, the reindeer find the snow and ice that cover the tundra a cozy resting place.

THE EARTH VIBRATED TO THE BEAT OF MANY HOOFS

This is a summer scene of a herd of reindeer on an Alaskan river—animals which provide the infant industry of our northern territory.

I thought. The first reindeer to come through was a trim little mouse-colored fawn.

"Ukalasuk—one female fawn," the chief herder sung out. The fawn was grabbed by its forelegs and borne swiftly to the ground. With a movement deft and quick three circular notches were cut in one ear, a triangular slash in the other, and Ukalasuk's fawn went racing away through the scrub willows.

Three adult females came next and were allowed to pass unheeded through the gate. A single glance at their widespreading, notched ears was enough for Hatta, the Lapp chief herder. "Tommy Carter, Nasharluk, Lomen Company," he called out to the man at the books as they fled past.

There was a commotion up at the narrowing entrance leading into the chutes from the corral. A clattering and stamping of hoofs, the sudden staccato rattling of antlers against the spruce uprights, and with a rush a sleek-coated, high-stepping buck reindeer came tearing down the length of the narrow way to the open gate leading out into the tundra and freedom. There was blood in this fellow's eye. Just when it seemed that he would make his escape the gates closed quickly. Two hundred odd pounds of magnificent flesh slammed vainly against the barrier.

"Ketchum pukmummy—(quick)" sang out the almond-eyed gate tender excitedly. Tommy Carter, an Eskimo boy of not over seventeen years, grasped the point of the left antler. "Let him go," he said, quietly. The gate was opened. Into the open bounded the buck with Tommy hanging to the antler.

Things happened. There was a flurry of dust; a blurred vision of flying hoofs, sharp as razors, flailing the air around Tommy's head; a sudden twisting snap of the proud antlered head. When the dust cleared the buck lay on its side breathing heavily, eyes bulging in surprise, while Tommy sat astride his neck as though nothing had ever happened. Calmly he unsnapped his pocket knife and nicked his ownership on the fallen monarch's ears. It was quite the prettiest bit of work I had ever seen, and the natural, nonchalant manner of it made the feat all the more impressive.

The work went on swiftly, smoothly, and systematically. Four kinds of reindeer were recognized: adult males, adult females, yearlings, and

fawns. Most of the adults were allowed to pass unheeded through the chutes on the run. Infrequently some mild dispute arose over ear marks, distorted, perhaps, by a frost bite or torn by the scrub willows. There was no "scrapping."

New lots were cut from the main herd on the flats and run into the corral as the others moved through the chutes past the handlers. With a roaring crescendo of thundering hoofs, great clouds of choking, blinding dust would rise, and with a rush the newcomers would sweep in. The fawns grunted loudly in terror as they lost their mothers in the swirling dust. With eyes ablaze the parent animal coughed harshly as she sought her baby. Antlers clattered together like rollicking schoolboys rattling sticks along a picket fence. The heavy breathing could be heard a quarter-mile.

Gradually the different noises were hushed. Dust slowly settled. Mothers found their fawns and came to rest in the center of the herd for a grand reunion, while solemnly and majestically round the edge of the herd marched the old bulls on guard.

News of the round-up traveled with incredible speed to every little fish camp and village along the shores of Kotzebue Sound. "Mukluk Wireless," the white men called this news service. In other words, you tell everybody you meet and they tell everybody they meet—pretty soon everybody knows. In skin boats propelled by sail, hand, and asthmatic outboard engines they came, and with them came hosts of children and dogs. "Plenty we eat now," one old Eskimo confided in me as though he were letting me in on something good.

Fat steers were killed and placed in cold storage. Cold storage is right, for here we had but to tear away the grass roots to expose clear, blue ice beneath. The whole country was a great, flat glacier with but a film of vegetation atop of it. Several shafts had been sunk into this ice for a few feet and chambers hollowed out to accommodate as many reindeer as were needed. Here I wish to submit for entry in the epicurean hall of fame a fresh reindeer steak chilled for a few hours in this Nature's ice cave before broiling over a bed of willow coals.

HARDLY THE DASHING REINDEER OF CHRISTMAS MYTH

Laplanders at Port Clearance, Alaska, milking one of the herd. The man of the family does the heavy work of holding the reindeer.

Flocks of big, pearly-white glaucous gulls gathered like buzzards on the desert and made active, efficient scavengers. Once in a while when the demand for offal ran ahead of the supply they would make a raid on the meat racks where the children would hurl sticks and shrill scoldings at them. Regularly every hour or two, a bold, long-tailed black bird would descend among the gulls and disperse them in all directions, after which it would help itself to the choice morsels lying about. The name of this dauntless robber was the jaeger, well named the parasitic jaeger. His habits were a combina-

tion of those of gull and falcon. In spite of these persecutions the gulls daily increased until more than a thousand scrambled madly in the offal or hovered motionless in the blue sky overhead.

Even the bones brought their measure of good cheer and happiness. Toothless old squaws, faces puckered like dried apples, sat around on their haunches and pounded and sucked marrow bones in noisy contentment.

COLD BREAKFAST IN THE SNOW

Nuzzling out the moss from beneath the snowy blanket, the reindeer is getting itself a meal.

Up at the corral the work proceeded to a conclusion without a hitch. Reindeer came through the gate and were handled at the rate of one hundred forty-four to the hour. There was no waste movement; no friction. Those Eskimos, working under white-man supervision, performed like a well-oiled machine. An efficiency expert could have curled himself up in the shade and gone blissfully to sleep for all the good he could have done. On the fourth day the last of that big herd slipped out through the chutes to join their vanishing relatives on the distant slopes. Next day not a reindeer was in sight. They were all back in the hills splitting up again into little bands to forage and roam another full year in the happy, wild freedom of the silent places.

It would make nice reading to say that the days of handling them by antiquated methods are over—but they are not. Of the one hundred or so reindeer herds in Alaska there are only eight with modern corrals with chutes leading out to the handlers. All the rest use the roping method. It is true that brush corrals or wings are sometimes built to confine the reindeer while roping, but this does not in the least detract from the barbarity of the thing. In the constricted space of a small corral the reindeer injure themselves even more than they would on an open range.

With the stoic Eskimo, blind to changes of any kind, we must indeed "make haste slowly." This Buckland round-up won over every native who attended, and the adoption of an improved method of roundup by these stockmen of the Alaska tundras marks a new era in the progress of reindeer raising —Alaska's sturdiest infant industry.

TWENTY-THREE thousand acres dedicated to the conservation of wild life—this is what the Paul J. Rainey Wild Life Refuge in Louisiana means. Formerly one of the finest duck-shooting clubs in the country and owned by the late Mr. Rainey, it was presented as a memorial to him by Mrs. Grace Rainey Rogers, of New York and Paris, his sister. The refuge was set aside following the suggestion of T. Gilbert Pearson, president of the National Association of Audubon Societies, and deeded over to that organization in view of its endowment, permanency and long record of achievements in conservation. Mrs. Rainey also liberally endowed the refuge to provide duck food and an adequate warden force.

Songsters of Solitude

By WILLIAM L. AND IRENE FINLEY
Of the National Association of Audubon Societies

(PHOTOGRAPHS BY THE AUTHORS)

[This article is another of the series based upon the expedition of the American Nature Association into British Columbia]

RUSSET-BACKED THRUSH
This bird is as fond of the deep woods as the hermit thrush.

MANY have been called to listen to the songbirds in their gardens, but few have been chosen to seek them in the solitude of the northern wilderness, yet this was partly the mission of the *Tusitala,* carrying the exploring party of the American Nature Association. The little yacht had been following the early chartings of Vancouver in the coastal waters of British Columbia. Her nose pushed eagerly into one of the bays he had visited, bathed in drizzling rain just as when this early explorer arrived. As the splash of the anchor resounded in the little cove, the canoe slid overboard and the party of writers and naturalists were soon standing under rough-barked Douglas firs centuries old.

"Captain George Vancouver may have stood on this very spot one hundred and thirty-two years ago," suggested one of the party who had been studying his original journals. "He wrote of the sublime mountains, the noise of roaring waters and the gloominess of the forest He didn't hear any songbirds. Perhaps he was too busy hunting an inland passage to Hudson Bay."

"What is that?" asked the associate editor, as a weird call note came sifting out of the mist. It was resonant and penetrating, a drawn-out whistle in a minor key combined with a throaty trill. It came from high up in the tree-tops that were wrapped in fog.

"It's the song of the varied thrush or Alaska robin," volunteered the naturalist. "To be sure, it is not rollicking and happy like the rain song of our dooryard robin, but at least it fits this home where the ground is padded deep with moss under century-old evergreens."

Another drawn-out whistle followed in a higher key. Then, as the bird hunters moved on under the spruces, firs and cedars, they suddenly got a glimpse of this strange robin of the deep woods that dropped to a lower branch, curious about strangers wandering in this unfrequented place.

BABY HERMIT THRUSHES WITH APPETITES
Two pictures of this denizen of the primeval forest far from the troubling haunts of man.

This is the strange bird that people sometimes see in winter in the coast valleys of Oregon and California. Instead of a brick-red breast, the varied thrush has one of bright rusty brown, almost orange, with a band of black across his chest and a bluish or slate-colored back. He is erratic in his winter wanderings. Although typi-

cally a western bird, he has occasionally appeared in New York and New England, perhaps following in the company of a flock of robins migrating from Alaska to the Atlantic. While the bird's natural shyness keeps him in the deep woods, yet he is governed by the severity or mildness of the weather and the food supply. He accepts hospitality at the back door when hard pressed for food.

It was nesting season, but even the naturalist's ardor for hunting the home of this rare songster was dampened by the cold shower from every branch he touched. No wonder Vancouver thought the dark evergreen forests of the north were birdless.

This conclusion of the early explorer was not far from the truth. Wherever we go back into the heart of the primeval forest, or into a new and undeveloped country, one can come near to counting the songsters on the fingers of his hand. Who would infer that man drives out the song-birds? It is safe to say that many more songsters live in our land today than when the Pilgrims came. Let a settler push his way back into the forest, make a clearing for the sunlight to enter so the land can be plowed and planted, and robins, meadowlarks, goldfinches, sparrows, bluebirds and others will follow his trail and live where he lives. The reasons are simple, because the very conditions under which men have been fostered and fed are those that have fostered and fed the song-birds.

The *Tusitala* cruised many miles along the northern coast, and patiently she stopped here and there at the whim of one who wanted to plunge into the forest, or of another to follow up a stream and climb the mountain; and in the miles of exploration the notebooks of the naturalists did not record as many western robins as one might see on ten acres at home. At the outlet of Broughton Lagoon, a robin came several times for red huckleberries just across the narrow waterway where two watchers were sitting under the protection of the hanging cedar limbs. The berries were as good as cherries, but how did he get along without angle-worms? Would he know what a lawn was? His nest must have been a long way off, for he disappeared across the lagoon and didn't return for twenty minutes. A squeak from the observers in imitation of a baby robin, that would have brought a backyard parent in haste to investigate, was of no interest to this fellow.

ROBIN, RELATIVE OF THE THRUSH

(OVAL) Young robin just out of the nest. Note the spotted breast.

Then one day the anchor dropped in Blinkensop Bay. Across the mud flat several slickered figures sloshed, making a semicircle of tracks where they followed a little sandpiper, and then their trail was lost in the depths of a great stretch of virgin timber. "Listen!" broke in the naturalist. From a moss-covered log beyond the tangle of salal came a tinkling melody like a whisper from the very soul of the forest. As the listeners crept closer, the song rang clearer, balanced in a double trill, the second part ending as high as the very firs themselves. Then up bobbed a tiny western winter wren, as much at home in the darkness of his woods as a house wren is in his orchard. He was just the size of a thumb, dark brown with a tipped-up tail; easier to hear than to see.

It is hard to believe the little winter wren has not been here since the birth of the forest. He is a real child of the woods, nor does he desert in the wettest, coldest season. When insect life is scarce, he still finds bits to eat under old logs that are falling to pieces. His home is often of moss, cupped and covered in the crevice on the under side of a log that

lies near a stream where not even a ray of sunshine can find it. His nestlings live and thrive in the dampness and darkness, yet they emerge from their cave-nest browned in body and bubbling in spirit as if they were sprites of the sunshine. The wet north woods are always brightened by the winter wren as the southern groves are by the hummingbird.

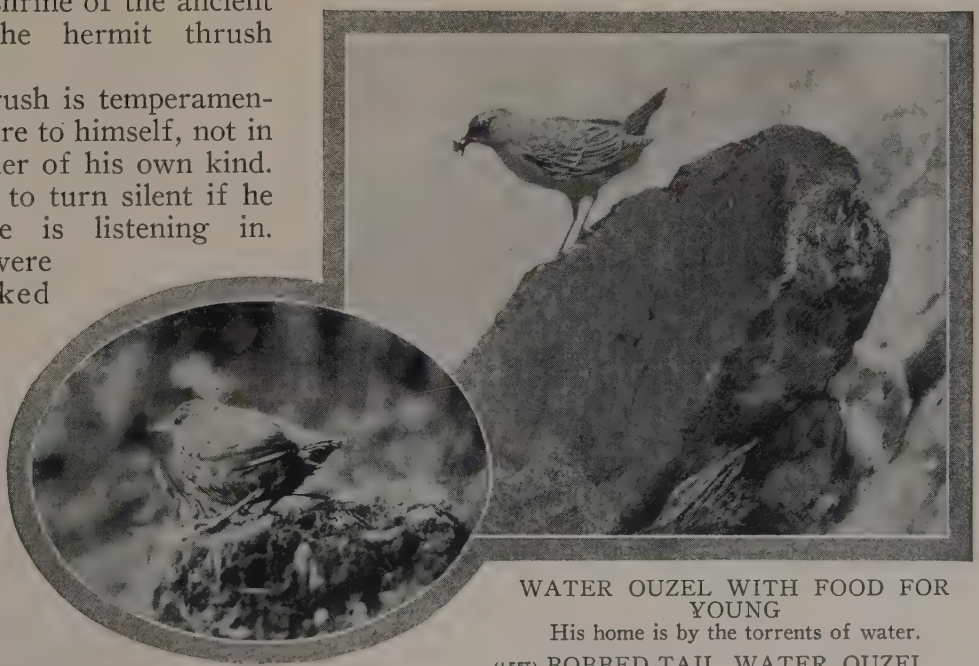
The bird lovers had followed the little winter wren off until they thought they were lost in a stretch of the voiceless forest, when suddenly the rarest of thrush songs wavered down through the trees. They had found the hermit thrush. There is no use trying to describe the mellow, flute-like notes. The song has to be heard in the background of the forest. It is one of those things remembered, but cannot be written down. But this from one of the note books: "Shy, retiring in habit, well named, its timidity is to be taken as a key to its finer nature. It is worth a long pilgrimage to sit in the shrine of the ancient woods where the hermit thrush sings."

AN ALASKA ROBIN BATTLE

This bird is also known as the varied thrush, and has an orange breast with a crescent of black across it.

The hermit thrush is temperamental. He sings more to himself, not in response to another of his own kind. He is even likely to turn silent if he suspects someone is listening in. How different were the russet-backed thrushes heard near the little settlement around Orford Bay. Four birds joined in the chorus as if each were trying to outdo the other. When the shades of night are falling, the song of the russet-back is a vesper hymn worth hearing. The musical whistle starts in a lower key and gradually ascends in a rolling wave of song that ends in a spiral thread. How can we say that the song of one thrush surpasses that of another? Are not these songs largely matters of association and suggestion?

Cruising on through an inlet of falling waters, the expedition paused while ardent climbers ascended the canyon where a stream dropped from a hanging snowfield. They were seeking snow and wild flowers, but also found a dipper or water ouzel. He was a chunky, slate-colored bird with a short tail. His standing on the rock and dipping or bobbing up and down seemed an indication of nervous temperament. The noise of falling waters is always in his ears. Although not web-footed, he dives and walks along the bottom hunting for water insects. Then he bobs up on a rock and the water rolls off his oily plumage just as from the back of a duck. His coat is so soft and thick he doesn't get wet.



WATER OUZEL WITH FOOD FOR YOUNG

His home is by the torrents of water.

(LEFT) BOBBED-TAIL WATER OUZEL

A youngster just out of the nest.

"I wish you could hear the song of the water ouzel," said the bird woman. But the wish was in vain. A chirp and several bobs were the limit of his repertoire here in the summer season when household af-

fairs were pressing. Winter time seems to be his season of song.

So, in places of solitude, it is like playing hide-and-seek to find songsters, for they are not plentiful. Ears have to be tuned and eyes have to be wide awake, for songsters of solitude are birds of shyness. It is not surprising that Vancouver, with his mind tense and his energy stretched in the prodigious task before him, did not see or hear the birds. If Alexander Wilson, his contemporary and a pioneer in American ornithology, had been with him, he would have discovered the varied thrush in the tree-tops and the water ouzel by some rushing torrent. He surely would have heard the tinkling song of the winter wren, the flute-like notes of the hermit thrush and the vespers of the russet-backed thrush, for he was a real poet-naturalist. In this wilderness of the north, these notes and songs of its winged inhabitants float out over land-embraced routes of the sea. Tossed back by the wooded eminence of a mountain island, they are twice heard. Man halts his chatter, eases on his oars, lets the paddle trail and puts aside his work to listen to the clear, unspoiled song. It is trilled in a primeval solitude, untouched by the often profaning hand of man. The beauties of Nature are simple, and the songsters who sing in the faraway places sing a simple song.

WINTER WRENS AT DINNER TIME

Feeding young (above) and lined up on a limb (below) awaiting food. The young birds are as large as the mother.

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The increase in price is due to many improvements in the magazine for next year, including handsome color pages which will start with the February issue.

This color work will be the finest procurable and the beautiful colored pictures will be the outstanding feature of the magazine, making it more than ever desired in homes where there is a love of nature.

PAINTING BY R. BRUCE HORSFALL

SILVERY FINS AND SPLASHING TAILS WHIP THE WATER

The big sock-eye salmon churn the water as the net closes about them. The open jaws of the male show him a fighting machine at this season.

Lo, The "Poor" Indian

By ARTHUR N. PACK *and* ELEANOR PACK

WE HAVE Indian oil millionaires and coal millionaires, but this is the story of Indian fish fortunes. There is a page of American history dealing with the gradual disinheritance of the American Indian and his permanent assignment to fixed reservations. It is a page not without more than one blot. What a curious turn of circumstances it seems today when some apparently useless land long ago established as Indian property proves to be unbelievably rich in some one of Nature's gifts.

Along the coast of British Columbia are several small reservations set aside by the Canadian Government for those last, frequently degenerate survivors of the Siwash Indians. With round faces and almond-shaped eyes, apparently clear indications of Esquimaux ancestry, this lazy, ambitionless race seems barely to support existence in small and dirty settlements. The arrival of visitors at the village of Alert Bay, which is a port of call for steamers bound for Alaska and northern salmon cannery points, is ever an excuse to stop work, and even the children are brought up to extract dimes from zealous amateur photographers.

THE INDIAN FISHERMEN SPREAD THE NET

Hip-booted, they stand ready to gather in the fish that run the Nimpkish.

The arrival of the *Tusitala* bearing the party of the American Nature Association was a signal for a call from police headquarters. Sergeant Hadley, of the District Post, in accordance with his duty, intended to see that no firearms should be carried out of season. A word of explanation, a glance at the endless paraphernalia of Mr. Finley's motion picture outfit, and his face wreathed in a welcoming Irish smile. A moment later he was turning the pages of NATURE MAGAZINE and regaling us with tales of Chinese opium smugglers and murderers caught by him single-handed. He explained to us that the Royal Northwest Mounted in British Columbia had disbanded and that its place had been taken by the British Columbia Police, a provincial organization which, even more than the old Mounted, never fail to get its man. We asked

him many questions, for he, if anyone, should know this country thoroughly.

"Why," said Hadley, "these Indians around here are the wealthiest people on the coast. It is hard to realize it, but if you look in those dirty houses you will find the most expensive brass beds, victrolas, and even radio sets. Nine months out of the year they work in lumber camps, trap for fur, etc., as you might expect, but during the other three they have their own way of making money. Come with me tomorrow and I'll show you."

Next morning there drew up near the *Tusitala* a gray, sturdy craft, and the voice of Sergeant Hadley invited us to come aboard. A "Mountie" in this region has to be his own navigator and his own engineer, as much at home at the wheel of his launch as in the saddle. As he straightened out his course toward the mountainous bulk of upper Vancouver Island, visible across the strait, he informed us that we should be quite at home, as his was an American boat, an ex-rum runner which recently had had the ill fortune to disobey the British Columbia law. "That's one on you," said Hadley; "we get you coming and going. First we sell you the liquor, and then if you try to take it home we confiscate it and your boat along with it. Hurrah for prohibition!"

TWISTING, STRUGGLING AND FLOPPING

Salmon, splashing in the net, testify to a rich haul and more talking machines to while away the Siwashes' winter.

Ahead, where the Nimpkish River, flowing down from a large fresh-water lake among the mountains, emptied into the tide, a number of shacks indicated an Indian Reservation. Hadley followed a tortuous channel through the mud flats until presently we found ourselves in the main river where a dozen large rowboats painted with the numbers and insignia of various salmon canneries lay close to the bank.

The nearest of these boats had a crew of about ten Indians, the oarsmen resting but ready, the man in the stern in charge of a carefully piled net. In the boat, leaning on a long pole, stood the most wide-awake Indian we had yet seen. Motionless as a statue, he scanned the river's surface with shaded eyes.

Suddenly some ripple told its story of a great school of Sock-eye Salmon, the old Indian gave a cry, the oarsmen bent to their task, and the boat shot out from the bank. The leader, steering from the bow, guided the leaping craft outward, around and inward once more; the long net drifted out from the rear, its lower edge sunk by heavy lead weights, its upper edge marked by a line of cork floats. The boat grounded fifty yards below its starting point; the Indians, all equipped with hip boots, leaped into that water and began hauling in—all but one man, who remained with the boat, circling the outer edge of that cork-marked line, jabbing with his pole and tossing rocks to frighten the salmon and prevent them from making the easy jump to safety. The circle grew smaller and silver splashes told the story of a rich haul. Grunts of approval from the squaws along the bank mingled with the joyful whoops of the fishermen. Who says Indians have forgotten how to yell? We found ourselves reverting to the primitive and joining in the excited bedlam. The purse strings at the bottom were drawn tight. Twisting, struggling, flopping, the erstwhile unsuspecting school of fish tumbled upon the gravelly bank, the hooks were brought into play, and one by one the salmon flopped into the boat. "How many?" called Hadley. "Three hundred and fifty-one," came the reply. "Yesterday, one time, we get one thousand."

Sock-eye salmon in these waters run about even in size and weight, each fish being about sixteen to twenty inches long and sufficient to fill three or four full-size cans. They are among the very best fish for canning purposes, and the companies pay at the rate of about thirty-five cents per fish. The haul which we witnessed had consumed about an hour, and brought in over one hundred and twenty dollars, or twelve dollars per man. This was somewhere near the average for the season. On good

SWARTHY SIWASH INDIANS PULLED AT THE OARS
Hip-booted and armed with piled net, they are off for the salmon fishing preserve the government reserves for them.

days a number of successful hauls will be made, but sometimes the main body of the school escapes. As the Indian Reservations were usually fixed to include the mouths of rivers where the tribes had fished for their own benefit from time immemorial, the Indians are the gainers. A wise government, to be sure, has enacted certain restrictions. For instance, a seine may never be drawn across the whole river. The two ends must be on the same bank. Whether or not these restrictions will prove sufficient to save this wealth to posterity remains to be determined. In many places there is much criticism to be directed at the commercial salmon-fishing industry.

Picture, if you please,

WITH TOTEM POLES OF THE THUNDER GOD
Alert Bay, British Columbia, where Siwash Indians compose the bulk of the population.

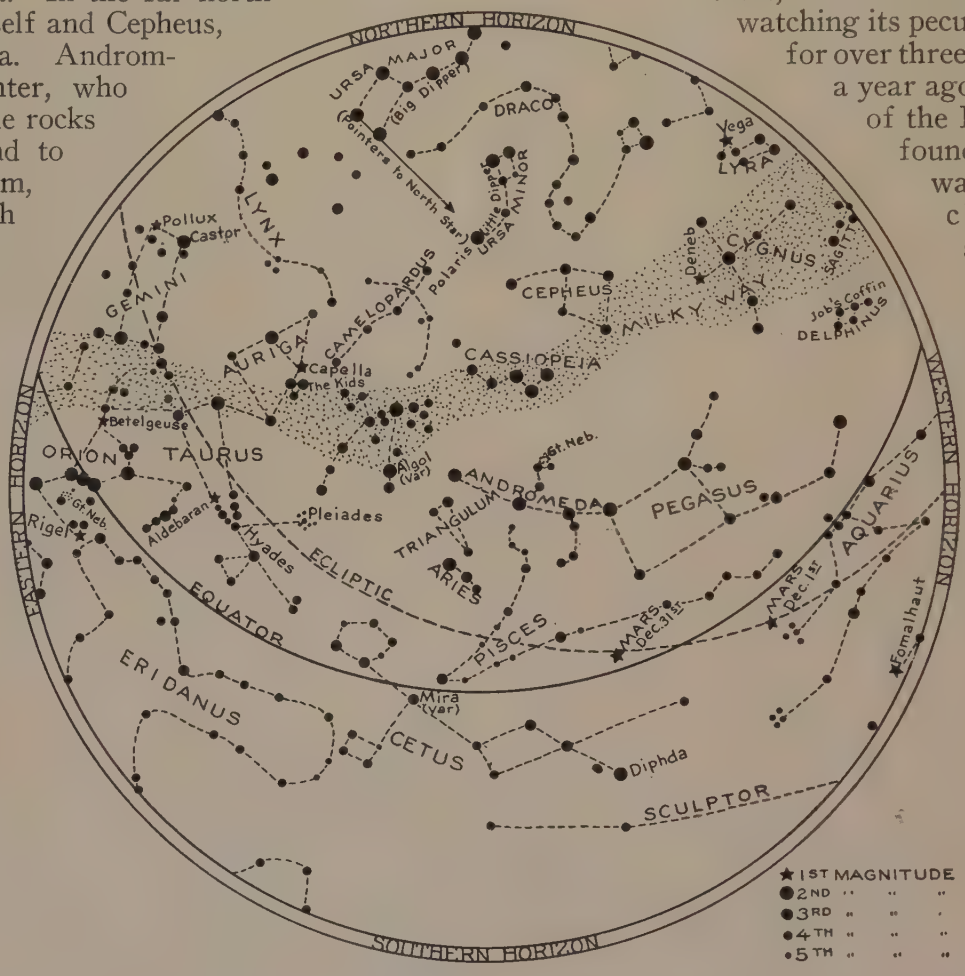
the western farmer raising cattle for the market. He must watch over his animals, or keep them under fence; he must feed them in addition, with all the expense coming from his own pocket. Then, at current market rates, he gets less than a cent a pound. Fortunate Indian—Nature looks after everything for him except the harvest, and even then she causes the salmon to run in schools to the mouth of his river. Competitive canneries furnish him with boats and maintain cook camps, each striving so effectively, in the belief that the way to an Indian's heart lies through his stomach, that the standards of fare are worthy of the finest hotel. When our friend, Hadley, suddenly remarked, "Let's have

(CONTINUED ON PAGE 381)

The Evening Skies in December

By ISABEL M. LEWIS

DRAMA is in the sky this month. All of the actors are on the stage. In the south and lying directly across the meridian is the huge constellation, Cetus—the Whale—the monster sent to ravage the shores of Ethiopia to satisfy the grudge of the enraged sea nymphs who had been offended by Queen Cassiopeia. In the far north is the Queen herself and Cepheus, King of Ethiopia. Andromeda, their daughter, who was chained to the rocks as a sacrifice and to save the kingdom, lies to the south and southwest of these groups and high in the heavens. Nearby is Pegasus, the winged horse that brought Perseus to the rescue, stirring up the dust that forms the Milky Way in his haste. Perseus is found next to Andromeda on the east.



Cetus contains but one bright star, Diphda, of the second magnitude and is on the whole a rather inconspicuous, though large, group. It does contain, however, a most interesting object known as Omicron Ceti or Mira, The Wonderful, the position of which is indicated on the map. This star is usually invisible without the aid of a telescope, but for a period of a month or six weeks out of every eleven months it suddenly comes into view to the naked eye and at its brightest is a star of the second or third magnitude.

Mira is what is known as a long period variable star of which there are some three thousand or more in the heavens. All of these stars increase and decrease continually in brightness in periods of many days, weeks or months in contrast to the short period variable stars, also many in number, which go through their light changes in periods of a few hours or days. Mira was the first variable star to be discovered way back in the year 1596 A. D., and astronomers have been watching its peculiar light changes for over three centuries. Only a year ago Dr. R. G. Aiken of the Lick Observatory found that this star was attended by a close companion star, bluish in color, which has evidently been too close to the brighter star to be seen before.

The eastern part of the evening sky is thickly studded with brilliant stars. There are five stars of the first magnitude, Capella, Aldebaran, Pollux, Betelgeuse and Rigel now in view in this part of the heavens and a still greater number of stars of the second magnitude. Conspicuous among the constellations visible in the east this month is Taurus, The Bull, which is easily located by means of its two well-known clusters, the Pleiades, which contains seven stars that can be seen without the aid of a telescope if one has good eyesight, and the Hyades, which outline the forehead of the bull in the form of a V. Aldebaran, the deep-reddish star in this group, is the bull's fiery eye and his long horns are tipped by two bright stars, one of the second magnitude, the other of the third, south of Auriga and north of Orion. On the southern branch of the V is the interesting star, Theta,

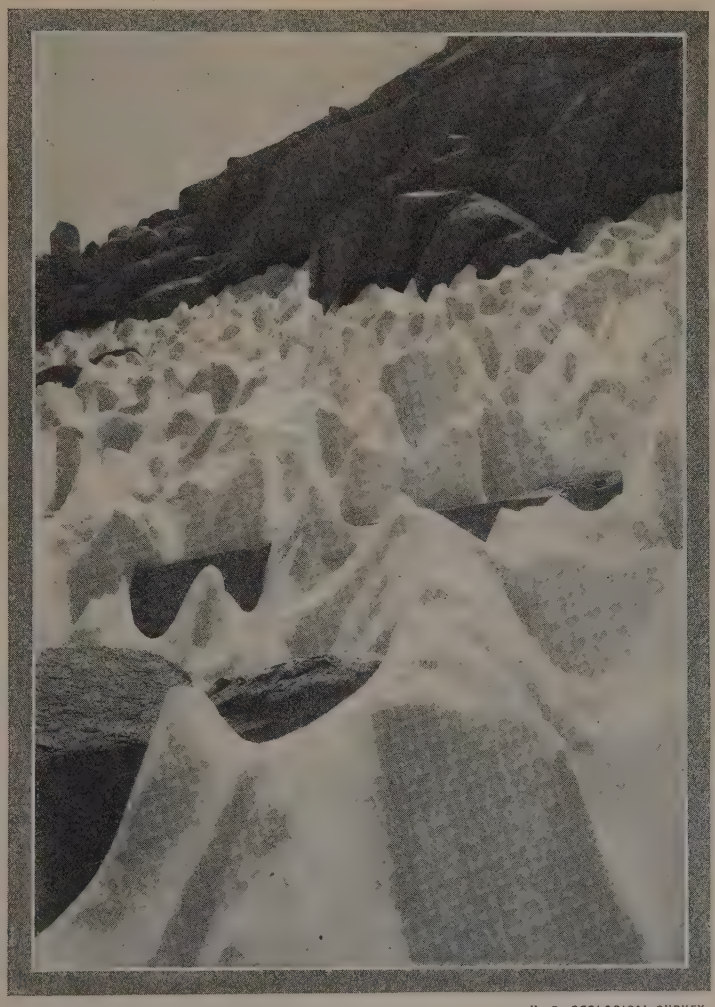
(CONTINUED ON PAGE 369)

Winter's Robes of White

By CHARLES FITZHUGH TALMAN
U. S. Weather Bureau

MOST human beings are fascinated by snow, however much it may, upon occasions, upset their plans or interfere with their comfort. The charm that it exercises depends in part upon its beauty, which is as direct in its appeal as that of flowers, sunshine and the songs of birds. It depends, again, upon impressions gained in childhood and never quite outgrown; associations with legends and fairy tales and the outdoor sports of winter. Lastly, the fund of information that science has gathered about snow makes it one of the most interesting manifestations in the repertory of Nature.

Take, for example, the wonder world of snow crystals. Here is a field of exploration as attractive to the artist as to the scientist. Its revelations have actually furnished models for the schools of design and provided patterns for craftsmen in many branches of decorative art. Pictures of snow crystals were published by Olaus Magnus, Archbishop of Upsala, as far back as the year 1555, and a large collection of such pictures, with one of the first attempts at a classification, was included in a work by the Arctic explorer, William Scoresby, which appeared in 1820. Scoresby's pictures and the much conventionalized drawings of James Glaisher, published in 1855, provided the standard illustrations for school books and reference books down to a very recent date. Nowadays the camera replaces the pencil, and thousands of snow crystals have been photographed under the microscope.



U. S. GEOLOGICAL SURVEY

HONEYCOMBED SNOW NEAR KUNA CREST

This snow formation is found most perfectly in the Andes, but this is a California picture.

Snow crystals are really ice crystals formed, not by the freezing of liquid water, but by the direct condensation at low temperatures of the invisible water vapor in the atmosphere. As water crystallizes in the hexagonal system, perfect snow crystals always have six sides or six principal branches. The majority take the form of thin plates, with or without rays; some are columnar, consisting of little prisms or pyramids; while yet others are combinations of plates and columns.

"The forms of snow crystals," says Dr. Gustav Hellmann, "are rarely noticed during such a snowfall as one observes at the earth's surface. It is only when it is just beginning to snow in calm air and when the crystals fall on dark objects that one distinctly recognizes their shapes, sometimes without the aid of a magnifying-glass. This stage is the most favorable for photomicrographic work, but it does not last long. The crystals become more numerous and often reach the earth in a damaged state, since they have collided with one another in their downward passage. As the fall of snow becomes denser, a number of crystals combine into a conglomerate of crystal fragments forming what is called a 'snowflake' when it reaches the ground. This latter is by far the most frequent form in our snowfalls, while in the polar regions the individual crystals are somewhat more common." The margins of snowflakes are turned up slightly, on account of the resistance of the air through which they have fallen. The largest flakes exceed four inches in diameter.

Snow crystals are responsible for the appear-

ance about the sun and moon of the various optical phenomena known as "halos." These occur in a large number of different forms — some common and some extremely rare—and each type of halo depends, as a rule, upon the prevalence in the atmosphere of a particular type of snow crystal. Hence students of atmospheric optics are much interested in the shapes of these crystals. It happens from time to time that a newly published collection of pictures of snow crystals, such as those obtained in connection with polar expeditions, serves to solve a long-standing problem connected with halos.

Most snow falls under a cloudy sky, but in extremely cold weather snow sometimes forms without clouds, filling the air with very small crystals, which sparkle in the sunshine, and to which polar explorers apply the name "diamond dust." Miniature snowstorms sometimes occur indoors, as when the moist air of a ballroom is suddenly invaded by an icy blast from outside.

The proverbial whiteness of snow is often tinged with blue, and occasionally gives place to red and other colors. The occurrence of red snow in the Alps was first described by De Saussure in the eighteenth century. In 1819 Sir John Ross discovered the Crimson Cliffs of Greenland, the dark red snow of which lay to a depth of a foot, with white snow beneath. Specimens which he brought home were found to owe their color to a minute organism, to which the name *Protococcus nivalis* was given. It is now called *Sphaerella nivalis*. Several other humble species of plant and animal life impart to snow different shades of red, as well as green and yellow. Apart from these coloring organisms, snow has quite a varied fauna and flora. Among its most remarkable inhabitants are the "snow worms" that are sometimes found strewn by the million over the snow fields and glaciers of high mountains. They dislike warm sunshine, and burrow deep in the snow in the middle of the day. Patches of brownish-red snow are also found in which the color is due to mineral dust, carried by the wind from more or less distant deserts.

In measuring rainfall as an element of climate, meteorologists include snowfall, but the actual depth of snow

PHOTOGRAPH U. S. WEATHER BUREAU

SURVEYING THE SNOW

It is sampled and weighed to show how much water will be available for irrigation and water-power.

IT TOSSES SNOW IN WHITE CLOUDS

A rotary railroad plow capable of chewing its way through drifts that block the way.

must be reduced to its "water equivalent" before it can be combined with statistics of rain. One way of doing this is to melt the snow caught in the rain-gauge before measuring its depth. Another plan is to weigh a sample of snow and compute the corresponding depth of water. If exact measurements are not required, an inch of newly fallen dry snow may be assumed to represent a tenth of an inch of water, or somewhat less. Old snow, even when not compressed by overlying layers, is always considerably denser, and its water equivalent is not easily estimated.

One of the most important undertakings in snow measurement is the determination, in the early spring, of the amount of water likely to be yielded during the subsequent season by the melting of the mountain snow fields that serve as natural reservoirs for irrigation projects and hydro-electric power plants. In the western United States the Weather Bureau maintains many special stations for measuring snowfall at high altitudes, but there are regions where no such stations exist and measurements are obtainable only by means of an annual "snow survey." This is carried out by men who travel rapidly over the snow fields, often on skis or snowshoes, carrying a "snow sampler"—a metal tube, with a sharp-cutting edge, which is thrust down into the snow in order to secure a core—and a spring balance, with which the specimen is weighed. The balance is graduated to show directly the corresponding depth of water. An analysis of the measurements made over the whole watershed indicates, in a general way, how the water supply of the season will compare with the normal amount.

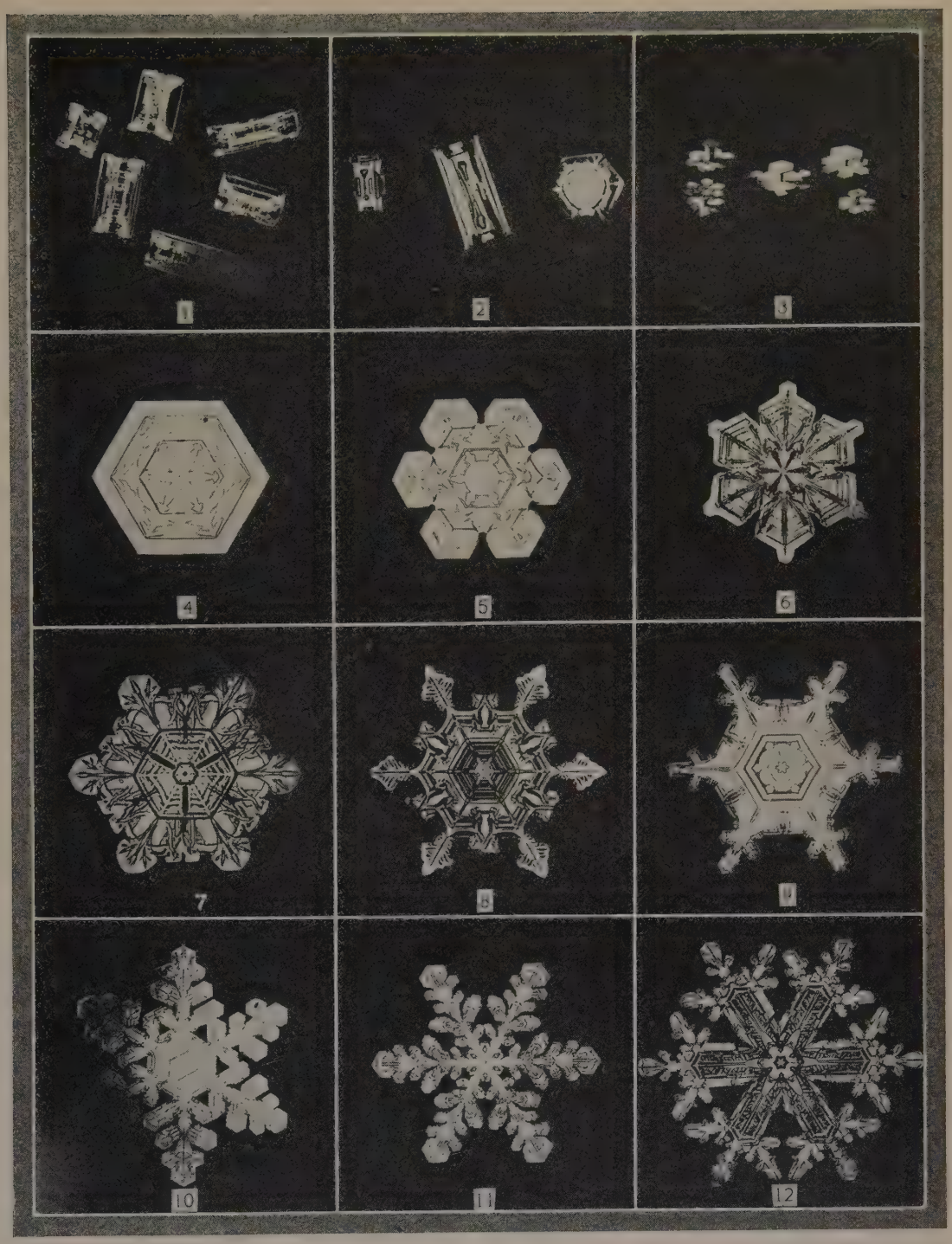


PHOTO BY WILSON A. BENTLEY

DEFYING MAN TO MATCH THEIR BEAUTY

Only a few of the innumerable beautiful crystals held in the white embrace of every fall of snow.

Mention of mountain snowfall calls to mind the subject of the "snow-line," which figures so prominently in physical geography. This subject is a good deal more complex than most people suppose. In the first place, three distinct kinds of snow-line are recognized: the *climatic*, the *orographic* and the *temporary*. The first is the lower limit of perpetual

snow lying in continuous fields. The second is the line above which patches of perpetual snow are found in sheltered places. The third is the lower boundary of snow at any particular time, generally varying from day to day. Near the equator the height of the climatic snow-line above sea level is from 15,000 to 18,000 feet. In high latitudes the line lies, in general, much lower, but the relation between latitude and the height of this line is exceedingly indefinite; far more so than might be inferred from the diagrams sometimes found in school books. Thus the mountains of central Asia, well outside the tropics, have a higher climatic snow-line than occurs anywhere close to the equator. On the northeast coast of Greenland the height of the line is more than 3,000 feet, while in Franz Josef Land, only a little farther north, it is less than 1,000 feet. In short, the ups and downs of the snow-line, when hunted over the earth, prove to be no less erratic than the distribution of the other features of climate.

PHOTO DR. C. KASSNER

GARLAND OF NATURE

Ribbon of snow hanging from ledge of building on which it formed.

Some of the moisture that falls as snow on the higher mountain slopes evaporates, even without melting, but most of it comes down to lower levels in the shape of glaciers, mountain torrents or avalanches. The principal season for avalanches or snow-slides is the early spring, when water collects under the melting snow cover and a very slight shock will suffice to set it in motion. Even the vibration of a passing train or the discharge of a gun may start a destructive slide. In this country the railroads are the chief sufferers from avalanches, which at times block traffic at certain points for weeks together, besides occasionally overwhelming trains. Snowsheds afford a partial protection. The great safeguard against avalanches, however, is the forest, as slides do not readily occur on forested slopes, and an increase in the frequency of these visitations is one of the inevitable results of deforestation and forest fires.

SO. PACIFIC CO.

SNOWSHEDS IN THE SIERRAS

Wooden barriers against the snows of the high levels to keep the trains running.

On lowlands as well as uplands snow causes trouble every winter by interfering with traffic on the highways. A few years ago the accumulation of snow on country roads led to no serious consequences. Sleighs substituted for wagons, and if a heavy drift was encountered it was easy to make a detour through the fields. The coming of automobiles and motor trucks has brought a demand for open highways throughout the year, and thus the problem of snow removal, once confined to big cities, now confronts state and county authorities all over the northern part of the country. It is met in various ways and with various degrees of success. A common practice is to fasten a heavy blade, like that of a road grader, in front of a powerful truck and push the snow off the highway. This process is generally supplemented by hand shoveling. Stretches of road subject to heavy drifting are protected by perma-

nent or portable snow fences. Where the traffic is light, rolling the snow with a heavy roller is a substitute for removal.

Methods of removing snow from city streets are still in process of evolution from the once universal process of waiting until the snowstorm was over and business was effectually tied up, and then setting as many men and wagons to work as possible to dig the city out. The tendency now is to begin operations as soon as the snow has covered the pavements, if indications point to a continuance of the storm. Snowplows, combined with mechanical loading devices, have proved an efficient and economical substitute for hand shoveling. The sewers are much more generally utilized than formerly for the disposal of the snow. The magnitude of the problem of snow removal in cities is illustrated by the fact that a single snowstorm in the city of New York, in February, 1920, entailed business losses estimated at $60,000,000, and the expense of getting rid of the snow amounted to $5,500,000.

PHOTO U. S. BUREAU OF PUBLIC ROADS

DIGGING OUT THE COUNTRY ROADS

Winter motor traffic has created the problem of keeping many more highways open.

Snowfall extremes in the United States are represented, on the one hand, by southern Florida and parts of southern California and Arizona, where snow is unknown, and, on the other, by the crests of the Sierra Nevada, in California, and the Cascade Range, in Washington and Oregon, where more than sixty-five feet of snow sometimes falls in a single winter, and it is common for one-story houses to be buried to the eaves.

No general account of snow would be complete without some mention of the "old-fashioned winter." We had one of these winters in the United

(CONTINUED ON PAGE 354)

PHOTO G. & C. CO.

FLANGING AFTER A HEAVY SNOWSTORM

Mechanical snow flangers and snowplows tend to eliminate the method shown in this picture.

The Fisher, King of the Martens

By WILLIAM MACMILLAN

IN SPITE of the fact that the fisher-marten is one of the most highly prized species of the valuable marten family, he is the least known of them all. And while some amateur has been unkind enough to liken him to the raccoon, he is actually the largest, finest, cleverest and most bloodthirsty of all the martens.

Contrary to all that his name might imply, this curious animal does not fish, and though he can display extraordinary aquatic ability when pushed to it by necessity, he really regards water with the same loathing of a cat. And speaking of cats, this strange creature with the double name is also known as a "black cat" in certain sections of New England and New Brunswick.

THE FISHER

He has the silhouette of a pine-marten, the steel muscles of a wolverine, and the cunning of a weasel.

Measuring some thirty-eight inches in length from the tip of his coal-black nose to the end of his bushy tail, the fisher has the silhouette of a pine-marten, the steel muscles of a wolverine, and the cunning of a weasel. He is bigger and heavier, of course, than his nearest relative, the pine-marten, and his bones are considerably larger. Standing low on the ground, not more than six inches at the shoulders, his chest is broad and heavily muscled, and his legs, though ridiculously short for so long an animal, are tough and strong. His claws, long and sharp and curved, are splendidly adapted for tree climbing. His ears, vastly keener than his eyes, sharp as they are, are short, and tipped with light grey.

Though possessed of very ordinary sight compared to some animals, the fisher is endowed with an amazing sense of smell, being able to locate a hare or feeding partridge long after they have passed his way.

It has been calculated by those closely in touch with the fisher country that more than 90 per cent of all the fisher-martens carry a coat of light brown fur with black legs and a black tail. But now and then a small female is found with dark brown, almost black fur. And, strange as it may seem, it is these small dark skins that the commercial world considers much more valuable than the larger and heavier skins, color and size, or rather the lack of the latter, being the more desirable qualities.

The fisher-marten is becoming extinct with alarming rapidity, and this despite the fact that he is a particularly shy animal, seldom showing himself in the daytime. Making his home high up in some great forest tree, he sleeps during the day and only ventures out during early dawn and late twilight.

In spite of his ridiculously short legs and clumsy-looking body, he can "quarter" the ground at phenomenal speed, beating the hare at his own game. But he is at his best in the trees. The original speed-demon of the aerial trails, he thinks nothing of running down and capturing—the fleetest of the red squirrels.

He has a deep-rooted preference for the densest parts of old forests, has this fisher-marten, gloomy aisles of giant spruce and pine and balsam, where huge dead trees lean against each other or stretch along the leaf-mouldy ground, all crumbling and moss-grown.

Surprisingly methodical and deliberate in all his habits, an adult fisher will move up and down the same ten-mile stretch of forests months on end, till something unusual drives him into the deeper wilderness.

But in all the thick wildernesses of the north country there is no more indomitable creature than this same fisher-marten. Afraid of no living thing in the forest, he will even turn fratricide

(CONTINUED ON PAGE 382)

Wild Bird Pets

By LEE S. CRANDALL
Curator of Birds, New York Zoological Park

DEEP-ROOTED and old as the human race, is the desire for pets. Like most legacies from the days of the cave man, the wish to keep and tame birds and animals is most pronounced in children. Every child, consciously or not, wants something small and alive to love and cuddle. There is something wrong with the boy who never has wanted to own a dog. And this does not stop with childhood, for witness the great numbers of grown-ups whose greatest joy is found in their pets.

Who does not know the man who proudly bears home a rabbit or a pair of white mice, ostensibly a gift for his wide-eyed offspring? And who has not seen him show in the little creatures a delight hardly exceeded by that of his children? There is a strange shyness that prevents many otherwise normal persons from admitting a love for any animal, beyond a dog, cat or horse. But in this day of many freedoms, this is being thrown off and pets are coming into their own.

BELOW

EUROPEAN GOLDFINCH

An endearing little chap whose silvery throat can pipe a simple tune.

RED-CRESTED COCKATOO

Member of a family of house pets hardy and easily kept.

Living creatures of any sort will fill the needs of most. But as in all pursuits, there are higher levels to which the true enthusiast may attain. The bird keeper reaches the pinnacle and, perhaps, his pets give him the greatest pleasures. Aviculture requires a perfect balance of science and skill, fascinating the most active mind, and bringing the lasting satisfaction of well-earned achievement.

To the uninitiated, the grip which this engrossing hobby takes upon its devotees is astounding. In the great cities, the shops of dealers constantly are haunted by hopeful seekers, from the tyro, who feels the spirit faintly stir, to the connoisseur, seeking the strange and beautiful to fill gaps in his collection. There are men of wealth in America whose estates are stocked with feathered creatures from every portion of the globe. There are small apartments, here and there among the sky-scrapers of our cities, where every room houses its quota of queer pets. That the owners are not infrequently urged to remove to other parts, merely adds variety to a life of pleasant excitement. And there are thousands of homes, whether humble or elaborate, that are brightened and made happier by the feathered mite that has endeared itself to every member of the family.

Cage birds must be hardy, easily fed and tame. All of these points are subject to qualification but in the main, they will hold. Most birds, even tropical ones, will thrive at ordinary room temperatures, especially if covered at night; group food requirements have now become so well known that all necessary ingredients are readily obtained; birds offered

for sale usually are fairly steady and many are charmingly tame.

More than 20,000 kinds of birds are known, so that selection seems difficult. But if we eliminate the many splendid species that thrive in aviaries but are too large or otherwise unsuitable for the house, we really have left only the great order of parrots, and the host of feathered creatures known as perching birds, which include most of the best songsters.

RIGHT
GREATER HILL MYNA
A bizarre but individual fellow.

SHAMA THRUSH
A brilliant singer with occasional flats and sharps.

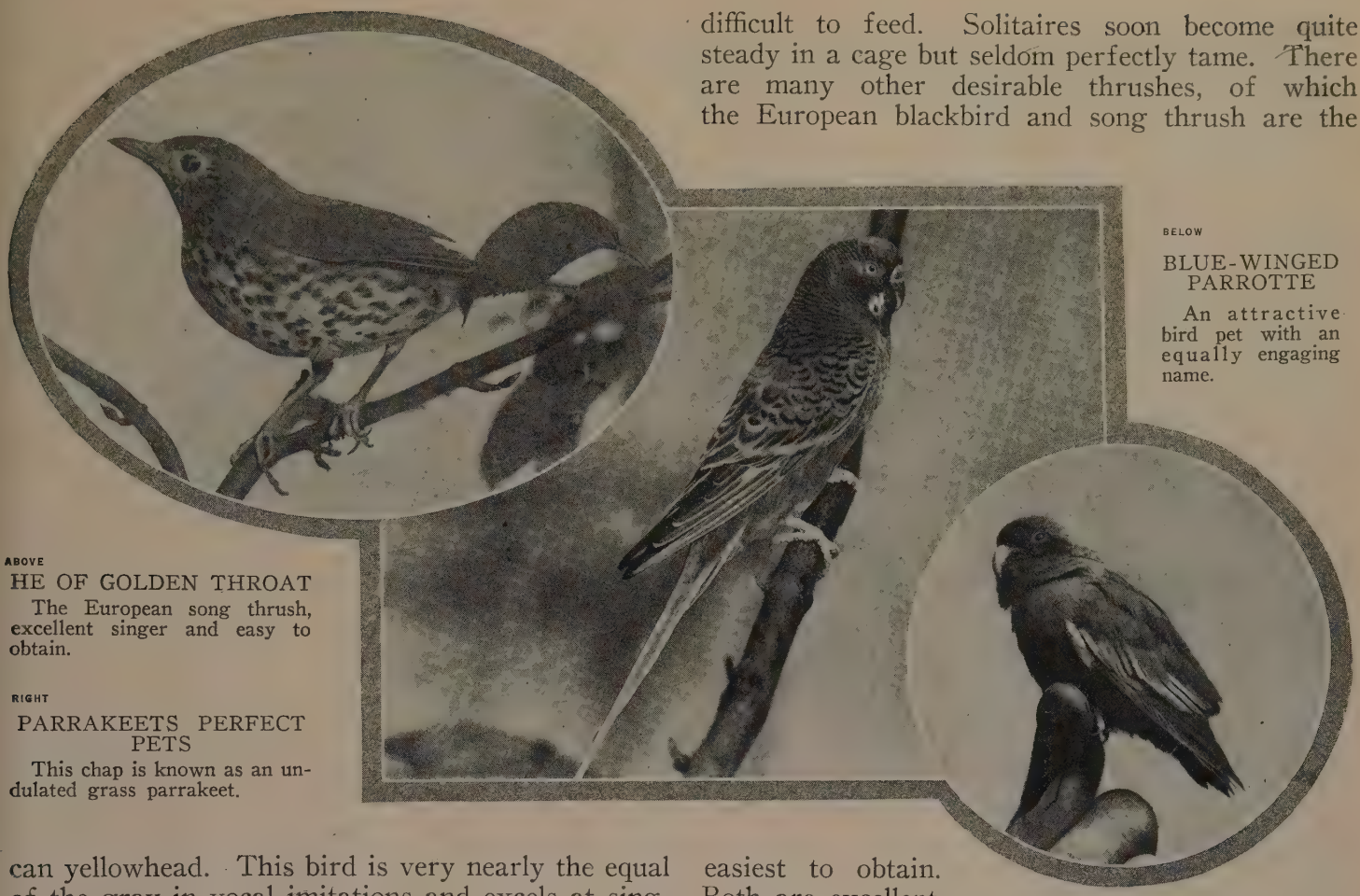
There are many species of parrots and for present purposes, they may be divided roughly into these groups: lories, cockatoos, macaws, true parrots and parrakeets. The lories come from the East Indies and Australia. Many are wonderfully colored and hand-reared specimens make engaging and playful pets. They seldom learn to talk really well and have the further fault of being rather hard to keep, since they are brush-tongued as an adaptation for pollen-feeding, and require a substitute for this somewhat unusual diet.

The cockatoos are large and showy birds, hardy and easily kept. All of the species are beautifully colored and many learn to talk well. However, their natural voices are harsh and ear-piercing, and human nerves are not equipped to withstand the onslaught for long. The diminutive cockateel, a symphony in soft gray, orange and yellow, has a low, pleasant voice and none of the boisterous manners of its larger relatives.

The macaws are the largest and gaudiest of the group and require no pampering. Young birds will sometimes learn to talk fairly well and while their voices are deep and rumbling, their loudest shouts can hardly equal the raucous outbursts of the cockatoos. The all-blue hyacinthine and glaucous macaws are lovely creatures but unfortunately are so rare that they can seldom be obtained. Tremendous beak-power is the macaws' worst drawback, since they have a way of demonstrating their abilities, with devastating effect, on household furniture.

THE TROUPIAL OF ORANGE AND BLACK
This relative of the oriole has a clear whistle and often can learn military airs.

Of the true parrots, the African gray is the best. Intelligent young birds frequently will acquire a vocabulary of a hundred words or more, associating them so accurately that often they are used with startling effect. The gray has a penchant for imitating the postman's whistle, the dumb-waiter buzzer and the door-bell. Very old birds can still pop a cork with zest. The green South American parrots, collectively known as Amazons, include a large number of species. If secured while young, any will learn to talk but the best undoubtedly is the Mexi-



ABOVE
HE OF GOLDEN THROAT
The European song thrush, excellent singer and easy to obtain.

RIGHT
PARRAKEETS PERFECT PETS
This chap is known as an undulated grass parrakeet.

BELOW
BLUE-WINGED PARROTTE
An attractive bird pet with an equally engaging name.

difficult to feed. Solitaires soon become quite steady in a cage but seldom perfectly tame. There are many other desirable thrushes, of which the European blackbird and song thrush are the easiest to obtain. Both are excellent singers but many individuals have an inherent wildness which is difficult to overcome. The Indian shama thrush often sings well but some birds mar their performance with harsh and unpleasant notes. It is easily fed and readily becomes very friendly.

The red-billed hill-tit or "Japanese robin" of dealers, is a smallish Indo-Chinese species which possesses all of the qualities desired in a cage bird. It is brightly colored, has a sweet, flowing and varied song, and will live anywhere on almost any sort of food. The sexes are difficult to distinguish, in spite of dealers' assurances, and since the song of the female is short and monotonous, one should hear the bird sing before buying.

Of the seed-eating finches, there is none to equal a really tame bullfinch, especially if it has

can yellowhead. This bird is very nearly the equal of the gray in vocal imitations and excels at singing in a high, soprano voice. In selecting a parrot to teach, one should make sure of getting a young, hand-reared bird. Wild-caught adults, known as "broncos," are as hopeless as they are abundant.

There are innumerable kinds of parrakeets, hailing from all parts of the tropical world. Most South American birds are lacking in brilliancy of coloration but often are hand-reared and make perfect pets. The Australian kinds generally are caught when adult and few are suitable for cages. All thrive and many breed freely in aviaries, where their beautiful plumage may be seen to the best advantage.

Amongst the song birds, the Mexican blue solitaire or "clarino," is by far the best. Its clear, liquid notes are like silver chimes, it sings freely, and it is not

ALBINO JACKDAW
A snowy fellow with an alert and watchful air about him.

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PHOTOGRAPH BY INTERNATIONAL NEWS REEL

TWO-TOED SLOTH

This animal spends most of its life in this curious upside down position, feeding on the foliage of trees, and passing from one to the other by means of the interlacing branches.

Two-toed Sloth

By EDWARD A. PREBLE

THE TWO-TOED SLOTH (genus *Choloepus*) is found from Brazil and Ecuador north to Costa Rica. The three-toed sloth (genus *Bradypus*), differing from the two-toed as indicated by the name which, however, has reference to the front feet only, and in several more important characters, does not come so far north. They are confined to the deep humid forests of South and Central America.

The nearest living allies of the sloths are the anteaters; the ground sloths of North and South America, one of which was about the size of an elephant, were their closest known relatives in ancient times, and possibly their ancestors. The sloths and anteaters are thus the sole surviving members of an ancient and numerous tribe, and they continue to survive only by virtue of the remoteness of their haunts, and their peculiar adaptations to special conditions of life.

The two-toed sloth passes its life entirely among trees, traveling slowly about beneath the branches, from which it hangs, in the position shown, by means of its sharp and strong claws. The forelimbs are used to draw the twigs and leaves within reach of its mouth. It never descends voluntarily, but passes from tree to tree by means of the interlacing branches, or, if these fail, by seizing a favorable moment when the wind swings them close together. If forced to descend, the animal has great difficulty in reaching another tree, its peculiar foot-

(CONTINUED ON PAGE 382)

Our Christmas Greens

By P. L. RICKER

Secretary, Washington, D. C., Wild Flower Preservation Society

IT SEEMS characteristic of most peoples to give little heed to the rapid depletion of their natural resources until an almost irreparable injury has been caused. Yet the great public response in Washington to the recent spring campaign for the protection of the Flowering Dogwood lends hope that a similar response may be made throughout the country to an appeal for the protection of the rapidly diminishing supply of some of our Christmas greens.

The idea is not, necessarily, one of forbidding their use altogether, but, rather, urging moderation in their use and the use of substitutes until such time as the cultivation of some of them at least can be undertaken on a commercial basis. Nothing could cause greater disappointment to children as well as adults at the holiday season than a ban on the sale of holly, winterberry, laurel, Christmas berry and ground pine for wreaths and festoons, but unless steps are taken either to restrict the use or increase the supply of some of these plants, it is certain that within two or three generations, and perhaps less, some of them will be practically unknown for Christmas decorations and only artificial substitutes be available.

Notwithstanding the cry that has been made against the use of mountain laurel, the fact remains that it is so abundant in much of the area from Connecticut to South Carolina that but slight inroads have been made on it in most sections, and in many localities the farmers regard it as a real pest. Young bushes usually grow about six inches a season, and after a cutting or fire vigorous plants send out shoots from their base which grow at the rate of from twelve to eighteen inches a season.

An amount estimated at a fourth of the New York market supply is destroyed in Connecticut by fire each year, and yet in suitable localities it remains abundant except in thickly settled regions. After a light fire new root shoots start up readily, but a heavy fire or repeated light fires destroy it entirely. Its foliage is not only extensively used at Christmas but at all seasons by florists and others for public and home decoration. Much of this material is stolen and sold by regular collectors. One New York dealer alone uses 300 tons a year, 1,000 tons is estimated to cover the whole New York market, and a rough estimate gives 10,000 tons as a maximum for the entire country. Bushes, where thick, may be cut over every five years without serious injury. With an acre of land yielding a quarter of a ton of cuttings a year, 40,000 acres would

CHRISTMAS MARKET AND ROCKY CREVICE

(Above) Wreaths of ground pine and holly prepared for the season, and (below) ground pine growing in the woods.

supply the entire country one year, or in rotation 200,000 acres would supply the entire country indefinitely.

If mountain laurel, by far the most abundant of any of our decorative evergreens, is to be kept so, its proper handling and even cultivation on suitable waste land should be urged. When cut close to the base it readily sends up new shoots. It is not found wild and is little used west of the Mississippi, and on the latter account is hardly a candidate for a national flower as some would have it. Owners of extensive mountain laurel tracts should receive from 50 cents to $2.50 per acre, or $1 per 100 pounds, for the collecting privilege.

A holly cutting with one- and two-year-old plants.

WINTERBERRY, HOLLY'S COUSIN

These two closely related woody plants of the east are in great danger of extermination.

Of all woody plants in the east, holly and its close relative, winterberry, are in the greatest danger of extermination. Around large towns where they were formerly common, one has to go farther away each year to find them, and, like the mountain laurel, most of the material that reaches the market is stolen. No estimates of the quantity used are available. The problem, however, is so serious that immediate steps for its cultivation are urged. The growth from seed is too slow, as it needs to be stratified for two winters before it will germinate readily. Also from seed the berry-producing plants cannot be told for several years.

Three-inch cuttings mostly from female trees (bearing berries) made in this latitude from the first of October to the first of November, keeping the leaves attached in the case of the holly (the winterberry has deciduous leaves), should be placed in shallow boxes with an inch layer of moss covered with two inches of sand, well watered, and the box covered with glass. They should be watered once or twice a week, but not allowed to dry out. In a greenhouse with slight bottom heat, or in the window of a room of ordinary temperature (70° to 75°) the cuttings should be well calloused in thirty days and in sixty days have roots one-half to one inch long. The plants should then be placed in pots and should grow to a height of at least 6 to 8 inches by fall, when they may be set out in nursery rows and the sexes carefully labeled. The plants prefer acid soil, and this may be obtained by mixing one-fourth by bulk of pine, spruce, fir or oak sawdust with the soil. Manure should not be used. In the nursery rows or in plantings the plants should be mulched with sawdust, pine needles, oak or laurel leaves once or twice a year to maintain the soil acidity unless it is naturally acid. One or two-year-old plants should find a ready sale at Christmas.

If extensive plantings are made, in about eight years from the cuttings, from a third to a fifth of the planting can be severely pruned every three to five years to obtain branches for the market, and these should yield a good profit. It must be remembered, in making cuttings and plantings, that if berries are wanted the cuttings must be mostly made from female trees with berries and a small proportion of plants from male tree cuttings planted with those from the female. If they become mixed during propagation or in the nursery, the berry-bearing plants cannot be separated until they bear, which will be several years at least.

The Ground Pine, Crowfoot or Trailing Evergreen, several species of which are extensively used for wreaths and festoons, cannot be readily cultivated. One has to go further into the country to find them each year, and their ultimate practical extinction, except in wild life preserves, seems only a question of time. Owners of property on which they grow cannot be prevented by law from picking and selling them or from delegating that right to another, but a few arrests for trespass or theft of material would doubtless have a good effect on any

community. The Toyon or Christmas Berry, sometimes called California Holly, is rapidly meeting the same fate on the Pacific Coast as the Eastern Holly. It is said to be still abundant in the California foothills, but has mostly disappeared from the vicinity of the larger towns. It is listed by a number of western nurserymen, with plants probably from the wild state. It can probably be readily grown from cuttings, and this should be urged as a source of at least a part of the market supply.

Artificial substitutes for these plants are found in the markets and florists' shops in increasing quantity each year in excellent quality and not excessively priced. With the increased use of substitutes the prices will be materially lowered. Lower priced substitutes of good grade can also be found in most of the five and ten cent chain stores. The substitutes take the form of attractive wreaths and chains of woven fiber dyed red or green, often with a small cluster of artificial flowers, leaves or berries attached. These wreaths are very extensively used in the rear window of sedan autos at Christmas, and the custom will doubtless spread rapidly. In the end the substitutes are much cheaper, as they may be put away and kept in perfect condition for use each year. They also have the advantage that decorations allowed to remain up until New Year do not become brittle and litter the floor, as invariably happens with the natural product.

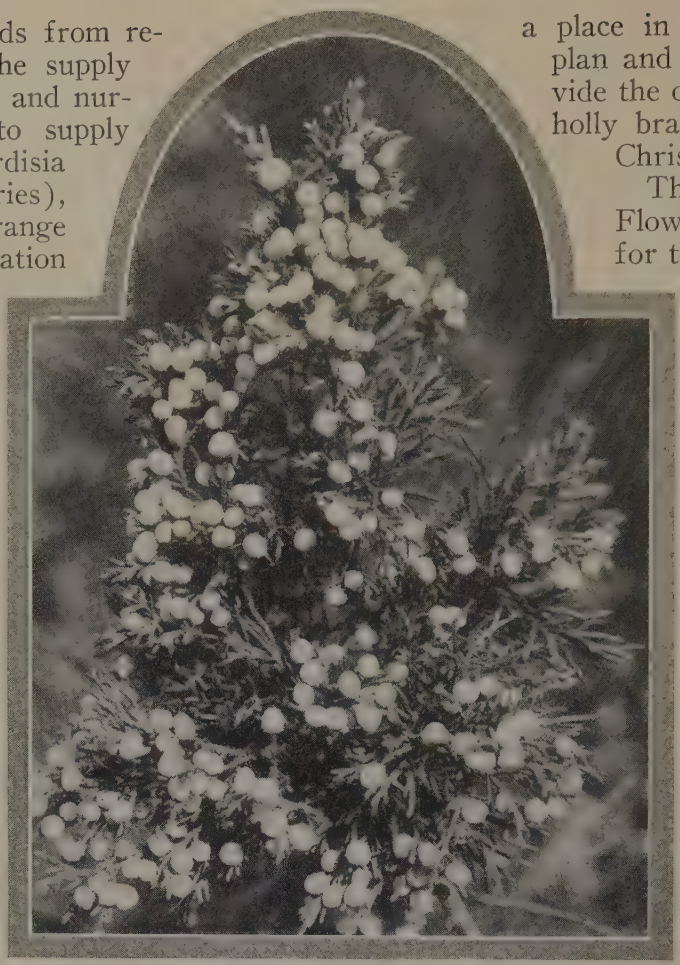
MOUNTAIN LAUREL IN BLOOM

This beautiful evergreen is the Connecticut State flower.

Small artificial trees, wreaths of both artificial and natural preserved and dyed leaves, imitation Poinsettia, decorated pine cones, lotus fruits and many other kinds of decorative material are common in the markets and stores at Christmas. The use of the lotus fruits should not, however, be encouraged, as the plants are rather rare except in certain limited areas, and the use of large quantities of

the fruits prevents the seeds from replenishing or increasing the supply of the plant. Many florist and nursery men are prepared to supply dwarf evergreens, Coral Ardisia (an evergreen with red berries), Jerusalem cherry, dwarf orange and Poinsettia from cultivation in various sizes, and these are found in the Christmas markets in most of the larger cities in constantly increasing numbers.

Nurserymen and florists should be urged to propagate holly from cuttings in quantity for the trade from trees bearing an abundance of berries. One-year-old plants from six to ten inches tall, in pots, should find a ready sale at Christmas time. Retailers should drape the pots with green crepe paper held in place with a red ribbon, making a very attractive table decoration. Older plants from the nursery should find a place in every ornamental planting plan and in a few years would provide the owner with an abundance of holly branches with red berries for Christmas use.



FRUIT OF THE RED CEDAR
Attractive sprig with real Christmas air.

The campaign of the Wild Flower Preservation Societies for the protection of our Christmas greens is receiving the active support of the Garden Club of America, General Federation of Women's Clubs, and the National Garden Association, and is enthusiastically carried to the school children by many of the teachers, particularly in cities where a special corps of nature teachers is maintained. The cooperation of all readers of this article is sought in urging upon their friends conservation and moderation in the enjoyment of our native plants in order that future generations may have the same pleasure from them as the present.

Winter's Robes of White

(CONTINUED FROM PAGE 345)

States, east of the Rockies, in 1917–18, when snow and ice blockades demoralized traffic and played havoc with the plans of the Fuel Administration. Its association with the World War will help to make it memorable, and in years to come those who endured its discomforts will undoubtedly talk of it as an example of the kind of winters that *usually* prevailed about that period. Such winters have never been usual in this country (since the Ice Age), though the belief that they once were has always held sway. Even before the Revolutionary War people were talking about the heavier snows and colder winters of a previous generation. The fallacy depends mainly upon the fact that man is prone to remember the exceptional and forget the usual; though its prevalence nowadays may be due, in some cases, to contrasting the conditions of a childhood spent in the country with those of later years spent in town.

The kind of Christmas weather depicted on Christmas cards is much rarer, both in this country and Europe, than is generally supposed. Dr. Hennig has investigated this subject in Germany and Sir Richard Gregory in England. In the former country, except in the mountains, only about one Christmas in ten is cold and snowy. In England such a Christmas as Mr. Pickwick and his companions spent at Dingley Dell is of rare occurrence, and in a period of eighty-three years snow fell only twice on Christmas Eve in London!

Trees and Toyland

By RICHARD W. WESTWOOD

BESIDE the counter where the Toyland railway line curved about a glass lake and up into a dark tunnel, the man in the salt and pepper overcoat and derby hat stood entranced. He had been on that same spot for several minutes. Suddenly he started guiltily and glanced about him. A moment later he was rolling a ridiculous and brilliant wooden duck along the counter, watching it flap its silly wings as it rolled. Again self-conscious, he moved on and busied himself setting up the toy furniture, upset when someone jostled the doll's house.

The visitor to the home of toys was having "the time of his life." He had wandered into the Toyland of the great store to buy something for his only youthful relative, his sister's boy in North Dakota. He had done the same thing for several Christmases now, always postponing his selection to prolong the joy of having a reason to be there. His fellow clerks at the office noticed his promptness in leaving at the end of the day, slyly remarking that romance must have tapped old Martin on his bent shoulder. It had; the romance of childhood playthings—of the mechanics of life made small and simple so that you could pick them up and do what you would with them.

How many grown-ups love to wander in Toyland, getting as much fun out of Santa Claus and his surroundings of toys as the children! There are toys of rubber, metal, celluloid and wood, seemingly every year more marvelous and varied. There are toys that are educational and recreational, toys for amusement and for exercise. Of all the materials that go to make these, wood is one that does not decrease but, rather, increases in use, and our forest trees contribute every year to make scooters and kiddie cars, blocks and boats, animals and sleds, tiny furniture and tools.

More than thirty million board feet of timber of upwards of a score of varieties are used every year for the making of toys. Some toy-makers use only wood in making their product, others use it in combination with metal or other material, and some few make no use of it. Those who manufacture toys and games of cardboard, of course, use wood indirectly, and there is no way of estimating the amount of wood employed to make paper that is used in many ways in connection with the production and marketing of toys.

COURTESY A. SCHOENUT COMPANY

YOUNGSTERS ARE ARBITERS OF THE TOY WORLD

Toys are made in several different groupings for amusement, recreation, exercise and education.

These commercial Santa Clauses, the toy makers, ply their trade largely in the east. New England, New York, New Jersey, Pennsylvania and Michigan are the states in which the bulk of the industry is located. As our forest resources have been gradually used up in the east, however, the manufac-

RIGHT

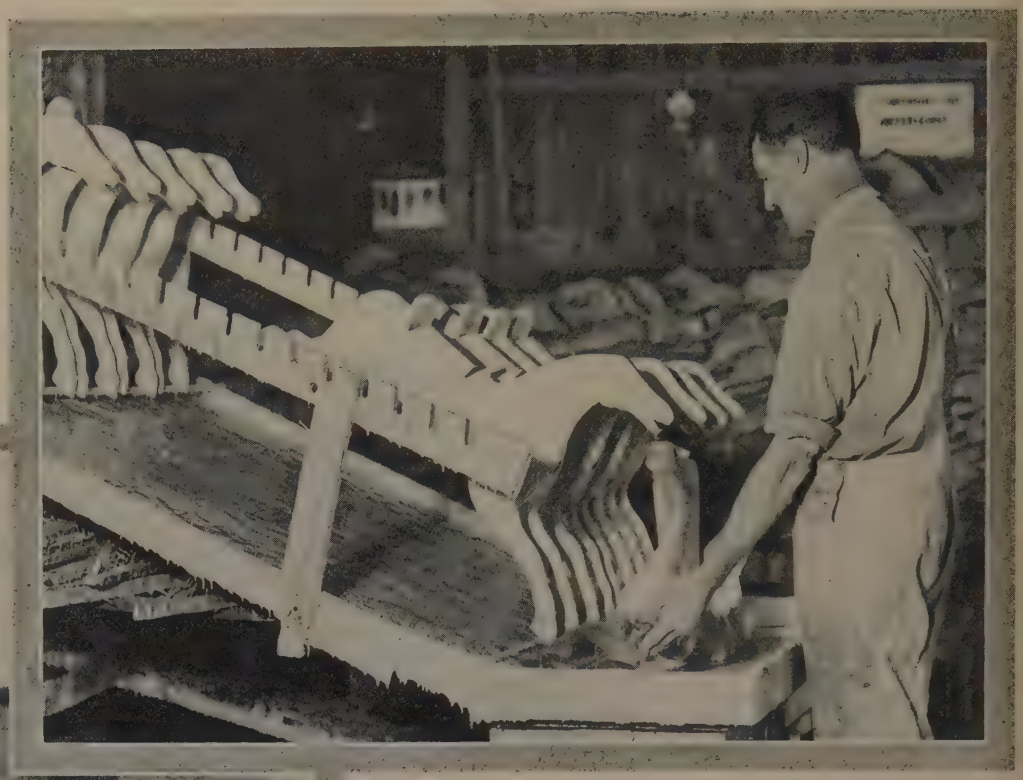
DIPPING ROCKING HORSES

The future vari-colored steed getting his first coat of paint.

BELOW

ASSISTANT SANTA CLAUS

A Christmas box filled with wooden wild animals.



turers have had to depend upon timber brought from the west and south.

While wood is a raw material used more in manufacture of toys than any other one, it is not the cheapest. Prices have increased as the supply has diminished and the distances lengthened. One manufacturer in New York State, using about two million feet of timber a year for toys, formerly bought its basswood within the borders of the state, but today it must import most of it from the middle west and Canada, substituting gum wood from the south for local basswood and buying its pine in Idaho instead of Pennsylvania.

It might seem that the toy maker would turn to less expensive materials, but this is impossible. The youngsters are the arbiters of the toy world. They want their toys true to fact. They know that the upright piano in the parlor is wood and they will not accept a tin piano. They insist upon wooden furniture for their dolls' parties because wooden furniture is in the home dining room. They know that Noah built his ark of wood, that small boats and sailboats are fashioned from wood and that many more of the things of daily life, reproduced for them in miniature, come from our forests.

Wood, also, lends itself to fashioning into the many kinds of toys. It can be easily and well painted and stained. So the toy industry still seeks it for a large amount of its raw material. The timber of the basswood tree is the most popular with the toy makers, supplying more than one-third of the demand. Maple, beech, birch, white pine, elm and oak rank next in the order named. The consumption of each of these exceeds a million board feet a year. Gum from the delta section has come forward recently in toy use, largely as a result of the using up of basswood. Other trees that furnish their bit to the nursery and sandbox are chestnut, ash, yellow poplar, red gum, cottonwood, hemlock, cypress, sycamore, butternut, tupelo, cherry and spruce.

In the industry there are various classifications of toys by the play purposes they serve. There are furniture toys, boats and water craft, tools, natural history toys, educational toys both amusing and instructive, games, architectural toys imitating things in real life, sleds, scooters and the like for exercise and recreation and the myriad toys designed only for amusement. In the last few years the manufac-

COURTESY A. SCHOENUT COMPANY

CHRISTMAS UNDER THE CIRCUS "BIG TOP"

Wooden clowns, elephants and other animals prove capable of all the usual antics of the sawdust strewn rings.

turers have taken great strides forward both in the variety and quality of their products. They have turned out such valuable things as ingenious sets of blocks and dowels, with all of the known—and some of the unknown—styles of architecture, inviting the youngster to create and build. As new things have developed in real life, they have been reflected in the toy world. In fact, no small measure of responsibility lies with the toy maker, for the minds of the youngsters and their natural aptitudes are developed in a measure by their playthings.

Many are the grotesque animals produced by the toy factories. Their very departure from fact and general lack of art, however, serves to interest the child in a certain bird or animal. Few of the inhabitants of the zoo, aquarium or aviary have been left out of the toy maker's list. And the childhood affection for playthings that represent Nature's world should more easily develop into a grown up affection for the real things.

The more expensive woods, such as mahogany and imported woods, do not usually go into the mak-

WOOD LENDS ITSELF TO FASHIONING INTO MANY TOYS

INTERNATIONAL NEWS SERVICE

Contemporaries of the Santa Claus of permanent jolly, bewhiskered middle age at work making Christmas wonders for the playroom.

ing of toys. Playthings get rough wear in the nursery, and frequently their life is not long. Instead, woods that are durable and will take the finish of the higher grade wood are chosen.

According to the government records in 1921, there are 362 establishments engaged in the manufacture of toys and games, employing nearly 10,000 people. The value of its products was more than thirty-five million dollars. In maintaining this important industry, important not only economically, but for the happiness of the future citizens as well, the forest plays its important part. It supplies strong hardwoods for the rocking horse and sled; tough woods for toy carts; smooth, pliable woods for toys that must be fashioned by saw and lathe.

Other of the natural resources with which Nature has endowed us go into the making of toys as well. But the forest still holds its important place in supplying raw material. Verily, the trees make Toyland, and it is to be hoped that when one picks out a toy village for a Christmas gift to nephew or niece, one will see to it that there are plenty of little trees on their round standards and with their green-dyed excelsior foliage, for the youngster must grow up to know that they are a vital part of the life of the community and the nation.

PORKY the Porcupine, with his pug nose, bristling hair and barbed quills, is an amusing citizen of the wild animal world. However, he is not so amusing when one captures him by the tail or attempts to get a grip on him elsewhere. In the January number of NATURE MAGAZINE Ernest Harold Baynes will give us some pointers about porcupines in an article by that title.

House Plants in Winter Quarters

By WALTER B. BALCH

Of the Department of Horticulture, Kansas State Agricultural College

"IT DOES seem to me that I have the worst luck trying to grow anything indoors in the winter!" How many times have we heard this plaintive expression from the lady of the home, who sees the beautiful potted fern grow brown at the tips of its sweeping arms and gradually wither away. But it is not luck. Instead it depends upon four things in the care of the plant—temperature, watering, light and soil.

One of the main sources of difficulty in growing plants indoors in the winter is that, in the average home, the temperature, with regard to the welfare of the plants, is neglected. During the day the temperature is kept higher than the optimum for most plants. This results, if other conditions are favorable, in a large amount of tender, unhealthy growth. At night the temperature is allowed to go down to a point most unfavorable to plant growth. The tender parts developed during the forcing conditions of the day are most severely set back by the cold of the night. Extreme conditions are not only disastrous to the plant strength but also are favorable to the development of diseases and some insects. Moreover, the plants are more seriously affected by diseases and insects because of their weakened vitality.

It is often quite impossible to have several temperatures in the house at the same time, and, though a high temperature is normally better for some plants than others, all will adapt themselves to an average temperature. They will do very nicely if the day temperature is constant and the night temperature about ten degrees lower.

Next to temperature, in its importance in the wintering of good house plants, is water. Some persons who have grown plants for a number of years and have learned that temperature extremes are fatal have failed to observe that atmospheric conditions indoors are not the same as those out-of-doors. The air in a steam-heated office building is nearly as dry as that of the Sahara Desert. The air in an apartment heated by water is usually not quite so dry, while in a house heated by hot air the humidity is still higher. In any case, however, a room heated by artificial heat is drier than it normally is out-of-doors. Under such conditions water added to the soil evaporates very quickly so that only a part of that added is available for plant use. The plant also uses water in dry, hot weather in keeping its "body" temperature down. Thus an insufficient supply of water causes plants to wilt down, slowly but surely.

EXTREMES OF TEMPERATURE KILL PLANTS

Jumping from the warmth of the day to the cold of night should be avoided.

Wilting is avoided by increasing the amount of moisture in the air. It is not necessary to keep the plant roots in water or to soak the soil continuously. Some plants like moist soil, while others do better in a comparatively dry soil. This point must be learned from observation or study. To keep the air damp, nothing has been found which equals a pan of water set on or near the stove, register, or radiator. The water in the pan is evaporated and distributed through the air, reducing the transpiration from the plants. Spraying the leaves with water, every clear day, also increases the moisture content and acts as a general tonic to the plant. Watering the plants two or three times a day is not a good practice.

Plants in pots require more water than those in boxes, as a large amount of water is lost by the evaporation through the pot. This is an advantage rather than a disadvantage, for air also passes through the pot, if it is unglazed, and is of benefit to the roots. Plants in small pots require more water than those in large pots. In the resting stage plants require less water than when they are growing actively. A good general rule to follow is to watch the soil at the top of the pot. When it is thoroughly dried out, water the plant. When watering, add enough to saturate the entire mass of soil. Do not just wet the top and trust to luck that the soil in the bottom will get wet enough. One can usually be assured that the entire mass of soil is soaked when water runs out of the bottom of the pot.

In addition to the usual method of watering pots, that is, pouring water on the top until it runs out at the bottom, there is a more positive way of watering. In this method pots and boxes are set in shallow water. The water will soak through the sides and bottom until it has reached its own level. Then, by capillary attraction, it will be drawn up in the soil until it reaches the top. When the top is evenly moistened one can be assured that the entire mass of soil is saturated. On removing the pot from the water the excess of water will drain off, and the soil needs no more attention until the plant shows signs of dryness.

THE LOVELY FERN OFTEN WITHERS INDOORS

Yet it will live to see another summer with care about temperature, water, light and soil.

All plants require some light. Sunlight supplies the energy which causes chemical reactions to take place inside the leaves. These reactions convert the raw food elements into food elements available to the plant. Therefore, such sun-loving plants as geraniums, roses, and abutilon, when set away in a dark corner, do not thrive so well as when placed in a sunny window. On the other hand, plants which like a mild amount of sunlight, and this includes palms, aspidistra, ferns, and many of the vines, do not thrive if put in a sunny location.

West windows are to be avoided whenever it is possible. The afternoon sun is too strong for plants, and it does not seem to act favorably on even the most sun-loving plants. If a west window must be used, some sort of protection should be given the plants to reduce the amount of light and heat.

Fertilizers of any kind should be added only in small quantities and only to healthy growing plants. More harm is done to house plants by overfertilization than any other single agency. Fertilizer is plant food and, as such, is very rich. It must not, therefore, be given in large quantities nor to sickly plants. If a plant has been growing thriftily for some time and then begins to go back, it probably needs a rest, and no amount of forcing will do any permanent good. It will, in fact, do a definite harm. During the resting period a plant is better if left entirely alone in a dry, cool cellar. It will of its own accord, and without any attention of any kind, begin to put out new green shoots. When these new shoots show themselves the plant should be given a thorough watering, a repotting if necessary, and brought up into its place in the sun. After it is growing well it may be given fertilizer.

The best fertilizer is liquid manure. A mixture of half straw and half manure is soaked in water about twenty-four hours. Water should be used at the rate of two gallons for each pound of the mixture. The solution is then poured on the soil. Sodium nitrate is less disagreeable to use and nearly as effective. It should be applied at the rate of one teaspoonful to one gallon of water. Care must be taken that none of the fertilizer touches the leaves

or stems of the plants. It should be added immediately after the plants have been well watered and not used more than once in two weeks.

Without good soil no one can grow good plants. The idea, however, that each genus must have a different soil is erroneous. Plants can and do adapt themselves to varying soil conditions provided only the necessary soil elements are present in sufficient quantities.

FERNS IN WINTER QUARTERS DEMAND PLENTY OF WATER

The air of a steam or hot water heated room is very dry and the plant's throat becomes quickly parched.

A soil that practically all plants can adapt themselves to is one containing leaf mould, garden loam, and clean, gritty sand. Leaf mould furnishes the food elements in a form quickly available to the plants. When leaf mould is not available, well-rotted barnyard manure is a very good substitute. Garden loam is a broad term used to describe a soil which contains some clay, some grass roots, and usually a little slowly available plant food. If there is none nearby, decayed pasture or lawn sod may be used. The principal purpose of the loam is to add bulk to the soil mixture. Sand has no food value but tends to prevent packing and caking of the soil and helps in the drainage. Good drainage is as necessary as soil or water for by draining off the excess of water air is allowed to enter the soil.

There is no substitute for sand, which should constitute about one-third of the volume of the entire mixture. The other two constituents of the mixture vary somewhat with the roots of the plant to be potted. Plants with large, coarse roots require less of the manure or leaf mould than those with finer roots. Young plants require less of the richer food-bearing soil than older ones. In every case the soil must be freed of lumps, stones, small sticks, and pieces of straw. This is best done by removing the sticks and pulverizing the soil. Sifting through a fine sieve is not advised. When the soil has been prepared as recommended a tablespoonful of bone-meal mixed into a bushel of dirt is often of general benefit.

Insects are not very troublesome to house plants. If any appear, they can be disposed of if the proper steps are taken immediately. Insects are grouped into two classes: (1) Those which eat parts of the plant and (2) those which secure their food by sucking out the plant sap. Those which actually eat parts of the plant are known as chewing insects and are best destroyed by picking them off the plants. They may also be destroyed with a spray of arsenate of lead. The arsenate is added to water at the rate of one tablespoonful to one gallon of water. Sucking insects may be destroyed by dipping the plant in oil emulsion or a proprietary tobacco extract. This material may be sprayed on the plants but the dipping process is more satisfactory. Nicotine sulphate is the best of the sprays

(CONTINUED ON PAGE 382)

Coral and Shells

By KILROY HARRIS

THESE corals and shells were obtained from "The Great Barrier Reef," an immense strip of coral extending along the northeast corner of Australia for a distance of about 1,300 miles, from about Keppel Bay, near Rockhampton, to near Cape York. The eastern coast of Queensland is unique in this respect—that for all that distance it is protected from the Pacific Ocean by this gigantic coraline structure, the largest coral reef in the world. The reefs are sometimes not more than ten miles from the Queensland coast; at other times they are one hundred miles. They are precipitous, and 280 fathoms of water are found within a few yards. The "inner route," as the passage between the Barrier and the Queensland coast is known, has been completely surveyed by the British Admiralty, and it is navigated by steamers of the largest tonnage, almost always within sight of the mainland. To the naturalist, the sportsman, the lover of the wonderful and beautiful in nature, the Barrier is an everlasting delight. Here one may see the coral insects' marvellous work. Here one may gather the wealth of a tropic sea, from the delicate pearl shell, which has caught the elusive iridescent glamor of its native waters, to that giant clam, which, closing upon the foot of the traditional victim, holds him in a vise-like grip, until he is slowly drowned by an incoming tide.

By WILL C. BARNES

'TIS WINTER in the high mountains. The snow lies deep over the lovely Alpine meadows close up to timber line where all last summer the ewes and their lambs fed and flourished on the lush feed. Through the forest two men move slowly and rather ponderously, as do men on snow shoes. On the back of each is a "ruck-sack" in which is packed all he has for housekeeping these cold nights; fifty pounds of dead weight and no luxuries in them at that. All about them the tall trees are festooned with snow which hangs to the boughs in heavy masses. Occasionally a tree gets tired of carrying its unwelcome burden and unceremoniously, and with no warning whatever, dumps its load onto the heads of the men, who shake the feathery stuff from their woolen helmets and packs and continue to plow ahead with the dull "slush, slush, slush" of their heavy "webs" in the loose snow. As they reach the edge of a large mountain meadow almost completely walled in by the dark green pines, they stop for a moment to rest and reconnoitre. Though the temperature is far below zero, great beads of sweat trickle in tiny streamlets across the face of each, cutting little channels through the black covering of charcoal they smeared lavishly all over their cheeks before leaving camp that morning, to save their cheeks from blistering and their eyes from snow blindness, that painful and often dangerous trouble that comes to those exposed to the glaring sun reflected from a white sheet of snow.

From his brightly colored "Mackinaw" one of the men pulled his pipe which he filled and lit although his numbed fingers could scarcely hold the match. A puff or two to test its burning

The cabin of a forest ranger and the ranger.

Close-up of Old Bill's summer cabin.

A stop for rest at Monument Lake.

A sheep ranch in summer.

The same sheep ranch in winter.

qualities and his mittens are quickly replaced, for the air is keen and nipping. Fully ten feet of well packed snow lay all over the area before them and but for a few outstanding lumps at one end of the opening and the leafless tips of the taller willows that mark the course of the tiny stream that meanders through the meadow, it was as smooth and unbroken as a dancing floor.

Although it is still early in the afternoon, the winter sun is fast dropping behind the fringe of timber to the west.

"Mighty hard to believe it's ever summer time up here," said one of the men, on whose breast the bronze shield of a forest ranger was fastened. "Last time I was up here Old Bill's sheep were scattered all over this meadow looking as comfortable and contented as a sheep could be. Now look at it—'bout ten feet of snow and more likely to come before spring. Won't there be royal good feed here, though," he added as he thought of the future. "If a man didn't know what those two lumps over yonder meant," waving his mittened hand toward them, "he'd never find a snug place to hole up in this cold night. If it wasn't for that piece of stove pipe sticking up through the snow like a periscope of some adventurous submarine, 'twould be a mighty hard cabin to locate, wouldn't it?"

"Surest thing you ever knew," laughed his companion, "but, man! won't that old sheep cabin look good to us for a stoppin' place tonight when we gets the snow cleaned away from the door and open things up. Campin' under a fir tree is mebbeso, now, romantic an' all that, but 'taint what I calls homelike, to say the least. Let's be wanderin' along, for I'm as hungry as a cat what's been shut up in a dark closet for three days."

"Old Bill always leaves some grub and blankets in his cabin," remarked the older ranger. "Last time I was past here the camp rustler was chopping fire-wood to leave in the cabin against an early visit next spring. There's a bully good fireplace in the cabin and we'll sure suffer with comfort this night."

At the cabin they unlaced their snow shoes and, using them for shovels, began cleaning out the deep snow which so completely covered the building that the door could not be reached until they had worked half an hour making a dug way down to it.

As they expected, they found a fine pile of wood all corded up at one side of the little one-room cabin. Soon they had a fire blazing in the great fireplace before which they hung their damp woolen socks and outer clothing to dry out.

Outside they planted their snow shoes in the snow in accordance with the universal practice of all snow shoers. In one corner in a large tin covered box they found a generous supply of food while on a frame swung from the roof logs by wires was a lot of blankets and bedding which were a welcome addition to their slender supply, for a ruck sack holds mighty few of the comforts, to say nothing of the luxuries, of camp life amid the snows of winter.

"Old Bill's sure a good provider," said the ranger, as he rummaged among the contents of the grub box. "Here's a card which says there's

ABOVE

All last summer the ewes and lambs fed and flourished on the lush feed.

AT LEFT

In the winter there was ten feet of snow all over the meadow.

canned stuff in the cellar hole under the floor, put there to keep it from freezing." An hour later they were smoking comfortably before the fire-place, at peace with the whole world.

"Talk about comfort," mused the younger man, "them there city people who have to live back yonder in them now, steam-heated hotels, they don't skeercely know the true meanin' of the word 'comfort,' what with folks to cook their meals for 'em, flunkies to wait on 'em when they eats, and every time they goes out doors they'n all bundled up in furs so's they look like a bunch of Eskimos, an' stead of trompin' round on foot they does their migratin' inside of them there now, limmusines that only lacks a few black plumes to look like hearses. Me for this life." He held his palms toward the glowing coals in a gesture of complete content with his lot.

Long before the grey light shone in the east, the two had breakfasted by candlelight, and by the time the winter sun began to show a golden glow through the forest they were outside the cabin on the crusted snow, their snow shoes laced to their feet and on their way for the day. They were out "On game patrol," looking after the Elk, Moose, Mountain sheep and other game animals, some of which try to winter even amid such deep snow and exposed to such severe cold.

These game patrols are provided by the Forest Service as a means of observing the winter habits and condition of the game animals from time to time, to watch for illegal beaver trappers, prevent the killing of game illegally and especially to stop the killing of elk by those vandals of the west, the "Tooth Hunters." These miscreants will kill a noble bull elk, tear from his jaws with dentist's forceps the two tusks or teeth which some civilized men wear as ornaments, and leave the carcass where it fell. Often the extracting of the tusks is done before the poor brute is fairly dead; equally often it is done to the living animals found wallowing about in the deep snow so soft and yielding that they are engulfed and unable to escape the cruel attacks of these wretched humans.

That day the two rangers dropped down from the higher elevation into a wide valley where the snow was not quite so deep. A good sized stream ran through it and there were many swampy places where warm springs broke forth and from which the snow had disappeared.

A bull elk in the deep snow.

The elk paws down through the snow to reach the grass.

A moose cow in the deep snow.

They found a moose cow and half a dozen great bull moose wading about in the swamp eating the willow tips and smaller branches or digging out of the snow the long yellow slough grass of which they are very fond. The moose all seemed to be doing fairly well and in good flesh. Farther down the creek they ran into several old bull elk and two cows. These animals paw their way down to grass and feed through snow from three to four feet deep without much trouble if it is not crusted too hard. Often, too, they will "mine" under the hard crust, working in the soft snow under it until at times almost their whole bodies are out of sight. Elk are not as hardy as moose and these showed signs of weakness from lack of sufficient food. They found one great bull dead in the snow, but when they turned his antlered head over to examine his jaws—a thing everybody does in the elk country—they found some tooth-hunter had been there before them.

A hasty examination convinced them that his teeth had been torn from his jaws while still alive and that he had been left to starve where he lay. On a high cliff above the valley they saw several mountain sheep with their great curved horns outlined against the sky, the desire of every hunter in these western highlands.

At a beaver dam along the creek they caught one of its inhabitants out on the snow evidently on a voyage of discovery as to the weather and snow conditions. The beaver made a rush for the open place in the ice through which he had emerged and when the rangers intercepted him he showed fight. He was helpless, however, in the snow, and after teasing him a few moments they stepped aside and he quickly disappeared.

Doubtless he told his family of the narrow escape he had had. The two men "cut for sign" all about the dam to satisfy themselves that no illicit trappers had been about the place, for at the present time the trapping of these animals is mighty profitable, but strictly prohibited by law.

Tired and weary, the two men camped that night at a snug ranger station provided for just such trips. Day after day these men on game patrol thread the forest by-ways, nor are their days wholly uneventful. Poachers are sometimes caught in the very act of skinning a moose or mountain sheep; trappers with their sledges loaded with the pelts of beaver and marten, worth from twenty-five to forty dollars each, are occasionally intercepted, their load of furs confiscated and themselves escorted under guard to the nearest law officer for trial. Tooth hunters are not infrequently caught with their pockets filled with freshly pulled elk teeth, the possession of which is prohibited by law. Often these renegades are desperate, for the loss of their pelts or teeth means the loss of many hard days' work and their prospective but illegal gains from their sale. Occasionally they show fight and shots are exchanged, and always the rangers must take no chances and make their arrests with caution, backed up by an automatic or their Winchesters. Often a shot fired from ambush, but fortunately missing its mark, shows them their job is no sinecure and teaches them the value of seeing the other fellow first. But it's all in the day's work, and many of the forest rangers in the "big game country" look forward all summer with real eagerness to the coming of winter and the possibility that they will be selected for these jobs which are certainly no "swivel chair" affairs.

Nature Study and Tree Conservation

At Christmas time the children naturally think of trees—the spruce, the pine, the fir, all laden with glistening wreaths, glittering balls, shining lights, and mysterious packages. Thus January is a fitting time for some lessons on trees, especially the evergreens. "What kind was your Christmas tree? Where did it grow? What kind of seed has it?" Let the children bring the branches of the discarded Christmas trees to school, or, better still, bring an entire tree if small enough. This will give opportunity for studying the leaves, their arrangement, and the way they grow upon the twig. Most Christmas trees are young, and their ages are easily determined by the whorls of branches, a whorl for each year. From this study should be developed the story of the evergreen from the seedling to maturity, and the species under observation should be the focus of the story, of the lesson, and of the aroused interest.

There is little use in dealing in abstractions with children, or grown people either, for that matter. It is only through the concrete that the abstract becomes understandable. Therefore, it is necessary to build up in the child's mind a vivid picture of the intimate life and growth of the most majestic of all living beings—a tree. When this is accomplished the children are ready for a forestry lesson, which may begin with some account of the places in our country where the species grow that are made into Christmas trees. Emphasis should be placed upon the value of these trees to our industries, and also upon the many years that we must wait for a forest to grow before the trees attain a size requisite for usefulness. An interesting story may be told of the way foresters care for the trees, and how carefully they select the trees to be cut from those that are to remain. There should also be a story telling how forests are planted and cared for.

Finally and incidentally, there should be a lesson on the proper selection of Christmas trees. It has been a shocking experience to tree lovers to see the waste of splendid young trees in the woodlands near towns, which have been wantonly sacrificed for this Christian holiday. If the trees could have been selected by a forester, the thinning out might have been beneficial instead of mere butchery. Luckily there are nurserymen now who raise Christmas trees as a crop, but as yet not nearly enough are thus produced to meet the demand. As a matter of fact, we in New York, "up state," have not yet experienced relief from this source. Every December brings the destruction of thousands of young trees, many of them taken without the knowledge or consent of the owners of the woodlands where they grow. Even private grounds are often invaded and pillaged. In developing these lessons it is not necessary to destroy the children's happiness in Christmas trees, but it is necessary to build up in them some intelligence and sentiment concerning the care that should be exercised in selecting the trees.

We must always bear in mind that the children of today make the citizens of tomorrow, and when we take into consideration our rapidly disappearing forests, it is surely of prime importance that the youth of this land be educated to a proper respect for trees. This can only be brought about through the understanding on their part of the life of individual trees which will exemplify the life and dignity of all trees. This important work lies in the hands of all teachers interested in nature study in our public or private schools today.

Why Not Meadow Mice?

The fat, comfortable meadow mouse has always been a creature of special interest to me. Its nest of soft grasses, often rented by the bumblebees later, its runways cut in intaglio on the meadows under the snowdrifts and which look like cuneiform inscriptions in the early spring, its fighting spirit when attacked, all combine to make this little creature an excellent subject for study. Recently in the *Journal of Agricultural Research,* Vol. XXVII, No. 8, Mr. Vernon Bailey published a delightful account of "Breeding, Feeding, and Other Life Habits of Meadow Mice." This should be available for all teachers who are interested in nature study. Mr. Bailey discusses the dispositions, voices, the playing, fighting, nest building, storing of food, and the uses of these animals. What is of special interest to the teacher who keeps living things in the schoolroom, he gives pictures and descriptions of the proper kind of cages wherein the mice may be kept clean and decent, comfortable and amused. Let some enterprising teacher try the experiment of studying meadow mice and report upon it.

The Way One School Studies Trees

The pupils of the third grade made a "Tree Book." This was not a little book, for its pages were two feet high and it was made with wallpaper. It covered the common trees of the city and park near the school; four pages were devoted to each tree. One was given two blueprints of the leaves; one bore the leaves pressed and

mounted; another was devoted to the drawings of a branch with the leaves upon it, done by the pupils; and one was given over to the description of the tree by the children. The descriptions were made more interesting as they were written in the form of letters, telling where each child had seen the tree and how it looked.

The method of compiling the book was as follows: The pupils were divided in four groups and each group was responsible for one page. Each member of the group made a page and the class selected the best, which were put into the final book. In judging and selecting the pages, accuracy and neatness were especially considered. The teacher suggested that more pages be selected and more books be made, but each child was so eager to keep possession of the page he had made and to take it home that the project was given up, and the teacher, being of the "born kind," acquiesced; she saw that an interest in trees would thus be fostered in the homes and in a manner that would bring about a wider knowledge of trees than could have been accomplished by making more books.

Hints to Teachers on Nature Subjects

By ELIZABETH K. PEEPLES

Instructor of Natural History, Washington, D. C.

This discussion of articles in the Magazine, together with hints to teachers on how to use them in their class work, is proving most helpful in Educational Work

Are Christmas Trees Wrong! Every school, like every home, wants a Christmas tree; but with the question of the conservation of Christmas greens paramount, it is natural to ask, "Is it right to have one?" What a relief to be told in no uncertain terms that the use of Christmas trees is advocated by foresters not merely on grounds of sentiment, but in view of economic considerations as well! The article tells the kinds of evergreens preferred as Christmas trees in different sections of the country, describing briefly the organized industry which supplies the northeastern markets, and the increasing business of raising Christmas trees on waste land. It compares the small proportion of trees thus used with the wholesale slaughter of them for less worthy purposes. Finally, it teaches that *true forest conservation is the wise use of trees,* contrasting it with the unwarrantable idea of preserving forests by forbidding their cutting. Children should learn these facts, that their joy in the Christmas tree may be complete in the knowledge that having it does not harm the forest.

* * *

A Reindeer Round-up With Christmas in the air the reindeer is naturally the most popular of animals. Teachers of primary grades will find in the article abundant help for the preparation of a lesson. In intermediate grades give the pupils an outline, access to NATURE MAGAZINE when they have finished other tasks, and set a time when they will be expected to report upon the subject.

Suggested Outline.—I. Natural home of the reindeer. II. Description of the animal. (With special attention to its adaptations to its ways of living.) III. Habits of the reindeer. IV. The Buckland River Round-up: (*a*) The place: Situation and preparation. (*b*) The herd: Size, behavior; complete subjection to man. (*c*) Identification of reindeer by owners: Method of separating small groups from herd; ways of marking; interesting incidents. (*d*) The feast: Menu; guests (Eskimos, gulls, jaegers, dogs). (*e*) Educational value of the round-up to the Eskimos.

Such a topic is bound to awaken interest, and any alert boy or girl will be eager to follow it up with supplemental reading on Alaska's infant industry, to learn not only more concerning the life of the reindeer, but also the uses of the animal other than as the steed of Santa Claus.

* * *

The "Poor" Indian Whether you are teaching history, the white man's treatment of the Indian, geography, the fishing industry, or Nature Study, there are facts of importance to be added to your lesson from this account of Indian salmon fishing in British Columbia. It is interesting to learn that "by a turn of circumstances" we have Indian millionaires, and that they give evidence of the wealth which has been Nature's gift to them by furnishing their dirty houses with brass beds, victrolas and radio outfits. The comparison of the farmer's large outlay and small financial return in raising cattle with the Indian's salmon harvest gathered almost without effort and with substantial profit is arresting. The story of the catch of sock-eye salmon is full of the details of netting this fish, and has in it the thrill which goes with every fish story worthy of the name.

Evening Skies in December In addition to placing the chief constellations, brightest stars, and planets to be seen in the December skies, the article touches upon variable stars and double stars, and gives a sufficient taste of the mythology connected with the various groups to stimulate a desire for more. After locating the objects to be seen, a few at a time, upon the sky map, the pupils are ready for observations of the sky by night. Another map drawn from memory after the star-gazing expeditions and corrected by comparison with the map accompanying the article will help to impress the form of the constellations and the relative position of the stars.

* * *

Winter's Robes of White Here is an article rich in possibilities for teachers. Drawing classes may make various uses of the marvelous designs in snow crystals. Physical geography classes want to know about the snow line, glaciers, mountain torrents, avalanches, and the methods by which snow interference is prevented along railways and in city streets. Science classes should investigate what snow crystals are, how and under what varying conditions they are formed, plant and animal life to be found in snow, and the method and reason for snow surveys. All these manifold phases of snow study are presented, many of them illustrated with photographs; and as if this were not enough, the student of psychology will find an interesting explanation of the fallacies of "the old-fashioned winter," and "Christmas weather" as depicted on Christmas cards.

House Plants in Winter No decoration adds so much to a schoolroom as thrifty growing plants, and no Nature lesson is more practical than one concerning the care of them. What temperature to maintain, how best to supply moisture to the air and roots, where to place plants that they may receive the sunlight they need, the use of fertilizers, the kind of soil best for potted plants, and how to get rid of insect pests are the questions of chief importance to success in growing things indoors. This article gives simple, definite information on each point. The care of plants in the schoolroom will give the pupils daily opportunity to apply the knowledge supplied here, and to discover by experiment which of the various treatments suggested best suits the needs of different kinds of plants.

* * *

The Fisher The King of the Martens is another entertaining theme for animal study. Though his personality is less striking than that of some of his wild neighbors, he is sufficiently different to be genuinely interesting.

Songsters of Solitude It is natural that a child's first love among birds with which he is familiar. Bird study should therefore begin with the feathered folk close by; but having grown well acquainted with them the pupils attention should be called to their relatives. This article and its illustrations will introduce to youngsters who have no chance to see the living birds, the Alaskan robin, the western winter wren, the hermit thrush, the russet-backed thrush, and the water ouzel. The children should read with especial care the descriptions of the songs of these troubadours; and stress should be laid upon the importance of this means of recognition. If possible they should learn to know the notes of every bird in the home neighborhood. Field trips are the best means of acquiring this knowledge. A really good imitation of bird calls will also help!

* * *

On Game Patrol Wherever children have been introduced to "Uncle Sam's handy man," the forest ranger, other heroes of adventure from Crusoe to Peary may as well reconcile themselves to second place. Here is an account of one of the most thrilling of the ranger's multitudinous duties. The teacher in search of composition material may make use of the article by developing an outline with her class, and asking the pupils to write upon some phase of game patrol.

* * *

Trees and Toyland At any time, but especially at Christmas time, a taking way to begin the study of trees and their uses is to ask every child to bring to school a toy made of wood. The variety of the objects (many of them miniatures of articles in daily use) suggests at once the infinite number of the uses of wood, some of which should be listed, or woven into story form. With the aid of sets of wood samples and occasional help from an expert woodworker such as the manual training teacher, each child should discover from what tree his toy was made. It then becomes his problem to find first a picture of the tree, next the tree itself, and to learn as much as possible about it.

Evening Skies in December

(CONTINUED FROM PAGE 340)

which can be seen to be a double star without the aid of a telescope.

Some stories have it that Taurus is the snow-white bull that carried the maiden Europa away from her companions while she was playing on the shores of Phoenicia, her native land, and that he was the mighty Zeus in disguise. He is supposed to be swimming through the sea to the island of Crete with the maiden on his back, so only his head and forequarters are shown on the star maps. The rest of his body is supposed to be submerged in the waves. Other stories have it, though, that Taurus is charging down upon the warrior Orion, who faces him with uplifted club.

Of Orion and Gemini we will have more to say next month when they have reached a higher position in the eastern sky and can be seen to better advantage. Gemini is easily located by means of its twin stars, Castor and Pollux, which are but a short distance apart and now well over in the northeast. Pollux, the brighter of the two, is rated as one of the twenty brightest stars in the heavens. Orion we can always distinguish by its Belt, which is made up of three stars of the second magnitude in a straight line, equally spaced, and by the quadrilateral of stars that outline the body, with the red Betelguese at the northeastern corner and the brilliant diamond-like Rigel diagonally opposite in the southwestern corner.

The constellation of Eridanus or, as it is occasionally called, Fluvius Eridanus, which means River Eridanus, fills the greater part of the southeastern heavens this month. It extends, moreover, far below the horizon into the southern hemisphere where its brilliant, first magnitude star Achernar, meaning End-of-the-River, marks the end of its course. In our latitude it can be traced by a line of stars of third and fourth magnitude running from a point near the brilliant Rigel in Orion toward the southwest and south until it disappears below the horizon.

The western skies this month have few objects to compare in splendor with the brilliant groups in the east, though the Great Square in Pegasus is still high in the heavens and over in the southwest is the brilliant planet Mars. There has been a decided falling off in the brightness of Mars in the past few weeks, though, as it speeds away from the earth and by the end of the month, it will become inferior in brightness to Capella and Rigel.

Jupiter comes into conjunction with the sun on the twenty-second of this month and will then pass to the eastern morning sky. It will not be visible throughout the month. Venus and Saturn are visible in the east before sunrise.

Sweden Saves the Eagle

Perhaps the United States can take a page from the book of Sweden, where an official decree has been issued prohibiting the killing of eagles. This is a phase of the present nationwide movement for wild life conservation, led by Bengt Berg, the John Burroughs of the northern land. A special preserve for wisents, the species of European buffalo, has been opened, and another for the beaver. Both species were facing extinction.

State Foresters to Meet

Members of the Association of State Foresters will meet in their annual convention at New Orleans, La., December 1 to 4, where it is expected that many important questions affecting the future forest policy of the country will be discussed. The issue of carrying into effect so far as the states are concerned of the provisions of the McNary-Clarke Act will be before the meeting. V. H. Sonderegger, State Forester of Louisiana and president of the Association, will have the activities of the meeting in charge, and among the events will be visits to the holdings of several lumber companies in the vicinity that have been carrying on reforestation work.

Nature in History

"Baseball and similar athletic contests played no part in the making of the virile race of American pioneers. Their training came from the direct contact with the forms and forces of Nature," said Arthur Newton Pack, associate editor of NATURE MAGAZINE, at the Recreation Conference of the Playground and Recreation Association of America at Atlantic City. "To the pioneer and to his children knowledge, comfort, even safety itself, came from keen observation of Nature's ways. The frontiersman learned to know thoroughly the trees, the stars and the habits of the smallest animal or bird, and the attaining of that knowledge, the acquisition of that experience, molded the character of our race. That is why the world today admires the keenness of American minds, our quickness, aggressiveness and 'punch.' The pioneer and his children did not concern themselves with the term 'recreation.' Their walks were not for amusement; their campfires were not for pleasure. But our lives are different. We live under glass. We work under forced draft. We do need something to compensate, reconstruct and refresh us, and if we would retain those qualities which we believe to be truly American, then our own history shows us that Nature Study in the open is the best answer. Unfortunately this is not a plan which can be adapted to every city playground. It is not so easy to arrange as a system of games and regulated play. But the growth of park systems, both city and state, offers an opportunity to train our boys and girls in the ways of the birds, the trees, the animals and the flowers, and this training will best teach them to observe, and to think and reason for themselves. Thus the benefits which our pioneer forefathers derived are equally available today."

Committee to Meet

Members of the Advisory Council of the National Conference on Outdoor Recreation will meet in Washington on December 11 and 12 to undertake the active work of the conference. The Officers and the Executive Council have been carrying on work of an exploratory and preparatory nature in the formulation of plans to be presented to the larger council at the coming meeting. Mr. Charles Lathrop Pack, president of the American Nature Association and the American Tree Association, is a member of the Advisory Council, and the members of both associations will be represented at the approaching important meeting.

A Home for the Gorilla

Fundamentalists and William Jennings Bryan notwithstanding, the gorilla is going to be given a chance in Belgian Africa. For many years this alleged relative of ours has been hunted and shot down. In reality he is an amiable chap, but unable to withstand the assaults of man and his rifle. Now, responding to the plea of naturalists, the Belgian Government has set aside several hundred acres in Africa as a sanctuary for the gorilla, where he can do his daily dozen from the limbs and roam unafraid. It is a commendable move, for the gorilla race was fast disappearing.

Yellowstone Travel Record

Despite lower rates for European travel and adverse economic conditions in some parts of the west, more people than ever before visited the Yellowstone National Park during the 1924 season. Park figures show a total of 144,158 visitors, but park officials and government authorities are preparing to receive more than 200,000 during the 1925 season. Of the visitors, 100,186 came by automobile and 41,045 by rail, the rest arriving by various other means of conveyance, even shank's mare. Every state and territory of the United States and 23 foreign countries were represented, and the exhaustive analyses of visitors made by the park authorities testifies to the far-flung appreciation of this beautiful playground of the people.

Is It a Record?

A Douglas Fir, with a diameter of fifteen feet four inches, has been discovered by Junior Forester McArdle of the new Northwestern Forest Experiment Station. This measurement is made breast high and the tree is clean of limb for the first one hundred feet. Vandals have burned a hole eight feet deep into the base of the tree, but it still stands, apparently strong.

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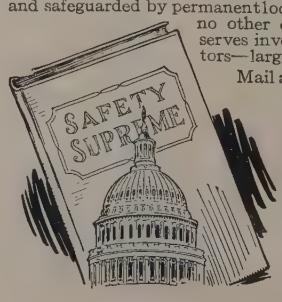

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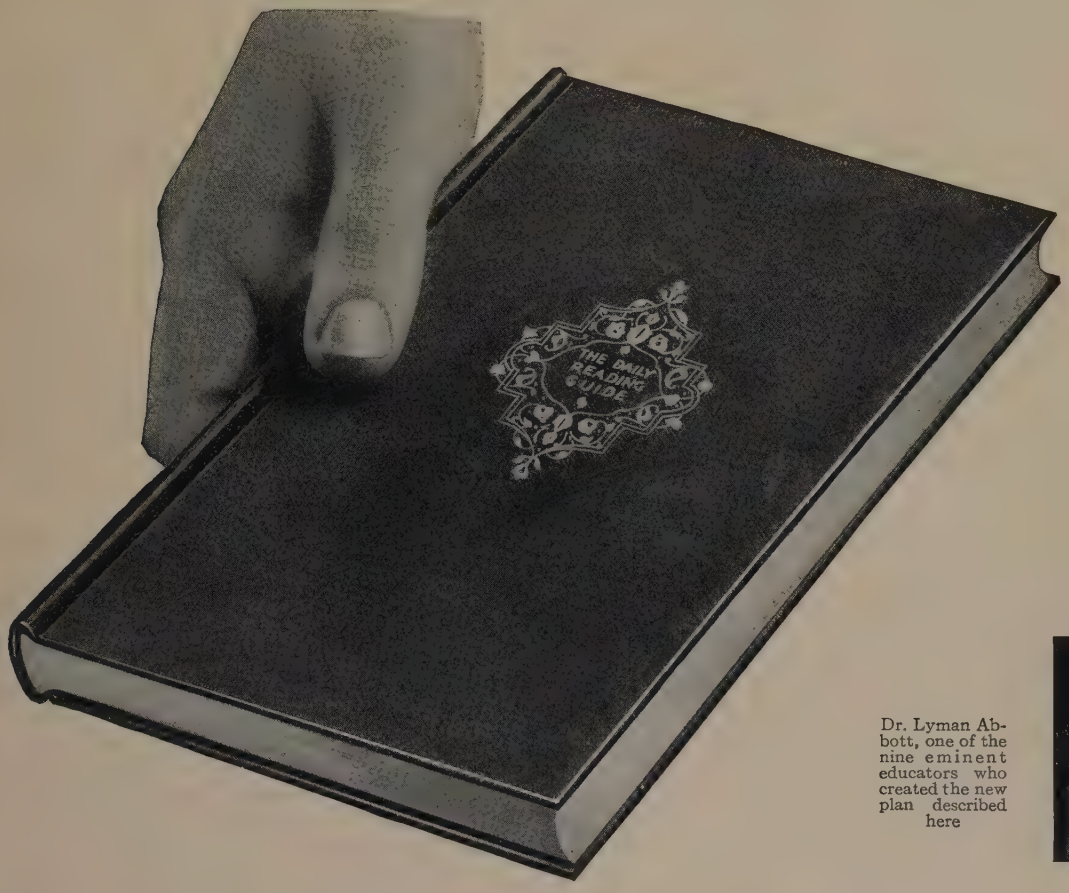

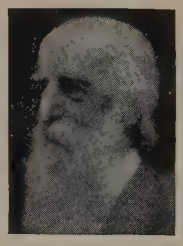

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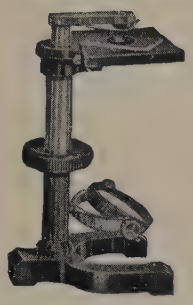

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Much that is new in Nature is hoped for from the Canal Zone. When the Gatun Dam was thrown across the Chagres River a tropical valley was transformed into a lake dotted with islands that were formerly hilltops. The wild life of the valley took refuge on these new islands, and Barro Colorado Island, about six square miles in area, has been set aside as a nature preserve. The Institute for Research in Tropical America, founded by the National Research Council, has made the island a virtual laboratory, and several scientists are already at work there. A preliminary report promises amphibians "of new and strange habits," many hundred species of strange plants and insects never before described.

Legion Urges Forestry

The State Department of the American Legion of Washington is actively awake to the forestry issue. Originating with one of the local posts having a forestry committee, a resolution was presented to the state convention and passed, calling attention to the diminishing supply of timber, pointing out that the residents of the northwestern state with its great stand have a duty as custodians of the forest, and calling attention to the importance of the McNary-Clarke act. The convention commended Congress on passing the measure and urged the Legislature of Washington to accept its provisions and transmitted its resolution to state officials, sending its delegate to the Legion National Convention instructed to present it for action there.

Furs and Conservation

Preservation of the forests, prevention of indiscriminate drainage of swamps and lowlands and laws to prevent wasteful and unrestricted trapping are urged by organized fur traders as a result of a conference held by members of the trade in the United States, Canada and England. This meeting was the first one of international scope to be held and has enlisted another organization in the ranks of the conservationists.

Lowering a Mountain

Thirteen feet were lopped off the top of Mount Mansfield in Vermont by the recent checking of levels done cooperatively by the state and the United States Geological Survey. The result shows that the mountain stands 4,393 feet above mean sea level, a baker's dozen feet less than it was formerly credited with. It still maintains a lead over any other peak in the state by a round 150 feet.

New Minds for Old In 12 Weeks!

THOUSANDS of people who only a short while ago were struggling along in low-salaried routine positions are today earning double and treble their former salaries and are enjoying all the luxuries that make life worth while.

They owe their sudden success to the evolution of a new science; a science through which they actually acquired **new minds**—minds which were entirely remade in **12 to 15 weeks!**

This may seem an utter impossibility. Yet one has only to investigate the facts. Thousands of signed statements from students of this new science offer indisputable evidence of the fact that it is easily possible for anyone to acquire a new mind—that it is easily possible for anyone to secure great increases in salary. (A few of these statements are reproduced below.)

How are these apparent miracles accomplished? The explanation is quite simple. Psychologists have definitely established the fact that the average man goes through life using only about one-third of his possible brain-power. This is not as surprising as it may seem. Your brain is just like any one of your muscles. Unless you keep it "in trim" — unless you give it proper exercise — it soon becomes dull, awkward, inefficient and "flabby." Yet the average man takes no steps whatever to keep his brain well developed. As a result his success faculties become weakened, and unless he develops a new mind he is doomed to live a life of inferiority or failure.

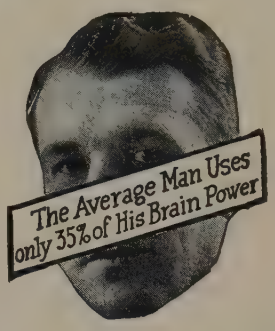
If you are now working for low pay, if you have gotten yourself into a rut, if you are a subordinate instead of an executive—it is a certain indication that you have let your mind "go slack." Success depends upon brain-power. With a mind which is only one-third as efficient as it should be you cannot even hope for success. The thing to do, therefore, is to acquire a new mind. You can do it, just as thousands of others have done it. The way is easy—it is through **Pelmanism.**

Pelmanism is the science of intensive mental development. Since its first appearance, 28 years ago, it has spread, with the sweep of a great religion, to every corner of the globe, until today its students number over 650,000 men and women in every walk of life.

The results that Pelmanism is bringing are nothing short of amazing. Instances of quick promotion through it are countless. Cases of doubled salary in less than six months and trebled salary in less than a year are not at all unusual. In exceptional cases there have been salary increases of 700, 800, and even 1,000 per cent. And all because **Pelmanism shows the way to new minds for old!**

There is no "magic" about Pelmanism. There is no mystery about Pelmanism itself. Further, it does not promise anything but what it already has accomplished in thousands of cases.

Pelmanism is meant for everyone. That is what makes Pelmanism a truly great science—it can help all mankind without respect to age, sex, position, religion or previous education. It is easily understood; its principles are easily applied. You will find it of deep and fascinating interest. You will be gripped by its clear logic. You will begin to feel its mysterious effect almost immediately. Many have said that even after the first hour they were conscious of a startling change in their whole attitude toward life.



Pelmanism will give you the vital spark—it will give you the type of mind you have always admired and longed for. Under its powerful influence such handicaps as timidity, lack of initiative, faulty judgment, dull perception and lack of directive ability disappear as if by magic. Pelmanism will swing the wasted two-thirds of your brain into action. You will actually be given a new mind—a mind which will sweep you forward, which will lead you on from success to success—until you have attained the goal you have set for yourself.

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The coupon below will bring you without cost or obligation, a copy of a splendidly bound 64-page book on scientific mind training. This vitally interesting book describes Pelmanism in detail; reveals the unique method whereby thousands of people everywhere are acquiring new minds for old in 12 to 15 weeks. It also contains the actual experiences of former students showing how this great new science led to unexpected heights of intellectual, social and financial success.

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"From a salary of $975 I rose in one step to $2,000 a year, and in January this year to $4,000 a year."

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"Since taking the course I have more than doubled my salary which is due entirely to your teaching."

"Since becoming a Pelmanist I have actually increased my salary 300 per cent."

"I had the pleasure of taking the course during 1917-1918. Previous to my joining the army my salary was $20 a week. My present salary is $10,000 a year."

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Single Set of 50 logs, roof and design book. Delivered $1

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California Almonds

About 85 per cent of the almond crop of California is produced in the Sacramento and San Joaquin valleys of northern California, writes O. K. Cushing of San Francisco, commenting on the article on the Almond Tree and Its Crop published in the October magazine. Another 10 per cent is produced in the Paso Robles district in the Salinas Valley and the remainder in the region around Banning. The article credited a too large percentage of production to the latter section of the state.

Forestry at Columbia

Although situated in a great city of granite, marble and brick, Columbia University is going in for forestry instruction through its university extension department. Prof. Hugh Findlay is in charge of the work, and Central Park and the botanical gardens will be used as laboratories for experimental work. Besides study of the use of trees in industry, a special investigation will be made of the importance of birds to forests and home trees. Professor Findlay is anxious to have the great city embark on a program of community forest acquisition.

Frogs on High

Although Mather Station in the Yosemite National Park is at an altitude of 4,600 feet, red-legged frogs have been found abundantly at this height. This member of the amphibian tribe usually prefers low altitudes. He is the largest frog in this region, and, although generally more wary than the yellow-legged, a number were easily caught and examined. In the same mill pond where these were found, Park Naturalist Russell reports, more than a dozen Pacific mud turtles were found navigating along the shore.

Alaska for Paper

Rapidly diminishing resources of newsprint paper stock in the United States and Canada foreshadow calling southeastern Alaska into service to supply pulp timber. It is reported that the two National Forests in this northern territory can produce about two million cords of pulp wood every year under scientific forestry practices. This means five thousand tons of paper. Adequate water power sites exist in this section for the conversion of this into paper, and the Forest Service and the Federal Power Commission act jointly in the sale of timber and leasing of power sites respectively.

I Learned From Big Investors

How to Become Independent in Only a Few Years on a Small Salary

"For years I thought it 'money-luck' by which big investors built fortunes," a successful investor wrote recently. "Then I was promoted to a position that brought me into contact with the confidential affairs of my employers. I was amazed to discover the secret of their investing—the legitimate methods they had used to build up fortunes in a surprisingly short time with safety!"

These remarkable methods are fully described in an important book called "Ali Baba's Cave Rediscovered." It outlines for you the most successful plan ever developed for the scientific accumulation of money. It tells you how to accumulate $10,000, $25,000 or even $50.000 in a certain length of time. It shows you how you can create a good-sized estate through investing in Forman First Mortgage Real Estate Bonds—all without risk or speculation of any sort. Mail the request blank for your copy. It may change the whole course of your life.

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Nature for Many

The myriad interests and mysteries of Nature were unfolded to many thousands in the Yosemite National Park in June, July and August of this year. The nature lectures attracted 37,736 and a total of 31,061 visited the nature museum, while 2,618 took part in field trips and learned how to "read the trailside." The great interest on the part of visitors to our National Parks in knowing more fully the wonder of Nature's works has proved a great stimulus to the extension of this activity in these areas.

Making Bugs Work

In preparing timber for use as pulp wood, one of the most expensive processes is that of removing the bark, which must not be allowed to get into the pulp. According to Dr. F. C. Craighead, of the Bureau of Entomology of the Department of Agriculture, bugs can be induced to do this work. One lumber company in the south has found that by girdling a tree to be cut late in the summer, bark borers and beetles are attracted to it. They make a healthy meal and at the same time so loosen the bark that it comes easily off when the trees are felled.

Dividends to the People

The Treasury of the United States was swelled by $5,251,903 during the fiscal year ending June 30, 1924, with receipts from the 146 National Forests. Timber sales from these great public forest areas brought in $3,020,037, and fees from grazing permits netted $1,915,561. Two other important items of revenue were $207,637 from leases for recreational and similar uses and $82,915 for water power right uses. Our forests are valuable economic assets that will be more and more valuable.

Washington Winner

At the annual get-together of the Washington, D. C., Audubon Society held at Friends School on October 24, Mr. R. Bruce Horsfall, who has recently joined the American Nature Association as Art Editor of NATURE MAGAZINE, was welcomed as a valuable new member of the local society. Arrangements are already under way for an exhibition in the near future of his wonderful water color pictures of western birds. There were about forty members present at the meeting, over which Dr. T. S. Palmer presided.

"I would rather see our boy a cripple"

Probably the greatest task you will ever face is guarding and guiding your boy through the dangerous years of adolescence.

Think what your boy must face. His imagination is at white heat. His energy is prodigious. Adventure invites him. The glamor of the spectacular and untried is seductive. Other boys have met these temptations, wavered and fallen. You have heard of their disgrace. Involuntarily the words have sprung to your lips—"I'd rather see our boy a cripple than befouled like that." And you have resolved to do everything in your power to prevent it.

Thousands of parents, facing the same situation, seeking a companion to help their boys through this trying period of life, have found THE AMERICAN BOY—the magazine that has been chum, guide, counsellor, instructor and friend to the cream of America's boyhood for a quarter of a century.

Your boy wants and needs THE AMERICAN BOY. He needs its companionship—its leadership, its stimulus to sleeping capacities. He wants its corking stories, replete with thrilling adventures in the world he must meet and grapple.

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Would Reduce Deer Herd

More than thirty thousand mule deer ranging the Kaibab Plateau in the Grand Canyon Game Preserve mean a drain on vegetation so great that the entire herd is in danger of extinction through starvation, according to a report made by a special committee of conservationists. According to an announcement from the North Pacific District Office of the United States Forest Service, reduction of the herd by one-half is regarded by this committee, which was appointed by Secretary of Agriculture Wallace, as necessary. The Forest Service has announced that it will give away the deer to all applicants who are willing to pay the cost of crating and getting the deer to the nearest railway shipping point, estimated at $35 per animal plus express charges to destination.

Forest Fire Championship

"California, for the second successive season, is the winner of the National Forest Fire League championship of the United States," says a bulletin from the California District of the Forest Service. A total of 1,810 fires burned over 605,000 acres of Government and private land up to September 30 and cost a total of $786,000. A conservative estimate of the loss is $5,000,000. Some day the lesson of the careless camper, the thoughtless cigaret smoker and others will be learned.

An Unqualified Success

"Save the Forest Week, 1924, was an unqualified success," declares Charles Stewart, Minister of the Interior, of Canada, in a foreword to a booklet containing the essays submitted by youthful Canadians under sixteen years of age in the competition. Not to be wondered at, in view of the French innate love of the forest, the grand prize was awarded for an essay in French written by Germaine Paquin, of the Academie Mallet of Quebec. The coming citizens of Canada are having their thoughts turned in a wise way.

New National Forest

Acting under the authority of the new MacNary-Clarke Forestry Act, which permits the creation of National Forests on existing military and naval reservations with the consent of the cabinet officer in whose department the reservation falls, the Benning National Forest, near Columbus, Georgia, has been set aside by proclamation of the President. This forest embraces about 80 per cent of the Fort Benning military reservation, or 78,500 acres, and is an excellent stand of southern pine timber.

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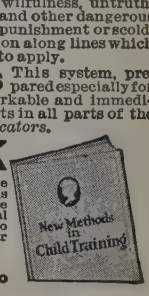
"New Methods in Child Training" is the title of a startling book which describes this new system and outlines the work of the Parents Association. Send letter or postal today and the book will be sent free—but do it now as this announcement may never appear here again.



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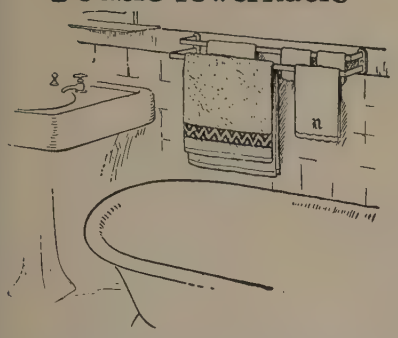

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A Conservation Program

The fact that Governor Smith has been reelected as Governor of New York, although on the Democratic ticket, does not preclude the hope that his second administration will follow that of his first in the field of conservation and that it will, in essence, carry through the conservation program set forth in the platform of the Republican Party. This plank declared:

"The conservation of the state's natural resources, its waters for power and potable uses, its forests and their wild life, is essential to the wealth and economic welfare of the state. The forests in the forest preserve are needed for the protection of the watersheds of our rivers. They should be protected and enlarged. Outside the forest preserve, 4,000,000 acres of nonagricultural land should be utilized for growing forest trees to replace our rapidly diminishing supply of lumber and wood and maintain wood-working industries upon which the prosperity of many communities depends. This state should encourage the reforestation of this land by supplying planting stock, by teaching the need of and the profits in planted forests."

Klamath Lake

A great deal more significance than might be indicated by the bare announcement is contained in the official record of the Department of Agriculture, of October 22, which states that the water will be turned back into lower Klamath Lake. The American Nature Association, through the pages of NATURE MAGAZINE, has joined with other organizations in advocating the thing which has at last come to pass. It means a great deal to bird protection, for this section was one of the biggest and most important Federal reservations in the west. Drains, however, have almost completely dried up; the bird colonies were destroyed, but it is believed now that the lake is to be again flooded, the birds will undoubtedly return.

Tommy Tiptoe

An attractive juvenile chronicling the adventures of Tommy Tiptoe in the world of insects has been written by Harriet Ide Eager and brought out by Alfred A. Knopf, New York. The little book takes Tommy, who stood on his toe tips whenever he was interested in anything, through a fairy yet fact visit of friendship to the homes of the lady bug, dragon fly, grasshopper, water skater, and the bee. It is attractively illustrated in colors from the brush of Edna Cooke.

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The Yellowstone

"At the time of which I write, indeed, it is probable that no place in the world with the exception of the remoter regions of Africa harbored so great a variety of wild life," says Lewis R. Freeman in "Down the Grand Canyon of the Colorado," Mead & Company, New York. "Besides birds in endless variety and countless numbers, there were found two species of wild pig and three of deer, mountain lion, wildcat, lynx, coyote and jaguar on the delta proper, with antelope along the foothills and mountain sheep but a few hours' climb beyond. Beaver, also, there was, and with no law against the trapping or shooting of it. For fish there were mullet, catfish and the so-called Colorado River salmon in the fresh water channels of the delta, with the famed papagallo, rival of the tarpon for gameness, sporting in the briny shallows of the Gulf below."

Fungi and the People

"Fungi and bacteria affect human life in many ways other than in their relation to diseases of cultivated crops," declares W. A. McCubbin of the Pennsylvania Bureau of Plant Industry, in "Fungi and Human Affairs," published by the World Book Company in the New World Agricultural Series. "Moreover, an intelligent understanding of these organisms must include knowledge of their place in the general realm of nature; consequently this volume, while giving greatest prominence to the question of plant diseases, has been broadened to bring out such fundamental realities as the source of the world's carbon food, the relation of green plants, animals and human beings to this source, and arising out of this relation, the beneficial work performed by fungi and bacteria in restoring carbon dioxid to the air, as well as the questions of wood rots, food preservation and plant diseases."

The Reindeer

"Mother Reindeer watched him with kindly eyes. She was very proud of White Sox. He was her fifteenth fawn, and the smartest, handsomest, and most graceful and agile in the big herd," says William T. Lopp in his book "White Sox—The Story of the Reindeer in Alaska," published by the World Book Company, 2126 Prairie Avenue, Chicago. "He was very tall. His body was slender and well proportioned. His head was finely shaped and held very high; his horns were still in the velvet, and they were beautiful. His hair was of the darkest shade of brown—all except his legs, which, from the hoofs to the knees, were as white and smooth as the skin of a winter weasel, and his nose, which looked as if it had been dipped halfway to his eyes into a pail of milk."

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The Humane Movement

A lack of collected and authentic information has been filled by the publication by the American Humane Association of Albany, New York, of a volume by Sydney H. Coleman entitled "Humane Society Leaders in America." The volume is the result of careful research by Mr. Coleman, who was formerly managing editor of the *National Humane Review.* It opens with a review of the anti-cruelty movement, which has only closed its first century, tracing the progress of legislation and public sentiment in support of it. It then treats with the careers and work of such leaders as Henry Bergh, Elbridge T. Gerry, George T. Angell and William O. Stillman, together with other men and women who have given their life work to the movement. This volume is a valuable contribution to a phase of the progress of our civilization.

Wild Bird Pets

(CONTINUED FROM PAGE 349)

been taught to pipe a simple tune. The little chap that is now a member of the writer's family is the most endearing of the many bird pets that have entered the circle. The European goldfinch and the linnet are the best, or at least the best obtainable, of the group. The former has the advantage of prettily colored plumage but the latter is a somewhat better songster.

The common troupial of South America is a relative of our own orioles, and is brilliant orange and black in color. Thoroughly tame birds are entirely fearless and have most entertaining ways. The natural song is a clear whistle and occasionally one sees specimens that have been taught to reproduce elaborate military airs.

Many birds besides parrots will learn to talk. The best of these are the yellow-wattled black mynas of India. Well-trained birds equal the most accomplished parrots but, like them, must be obtained when very young.

Lo, The Poor Indian

(CONTINUED FROM PAGE 339)

some French pastry," several hungry persons considered it a most ill-timed joke; but a few moments later we sat before a clean board table, and a Chinese cook, who evidently appreciated the favor of the law, set before us the most unbelievable pastries, pies and dainties. He only seemed a little hurt that our capacity was less than that of half-breed Indians.

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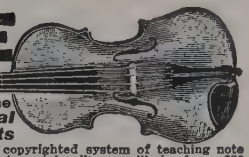

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House Plants in Winter Quarters

(CONTINUED FROM PAGE 361)

for sucking insects. A teaspoonful to a gallon of water will destroy the insects if it comes in direct contact with them.

The growing of plants requires care, time, and observation. With the growing of indoor plants this is especially important for even the best house conditions are not the most favorable for plants. Good-looking specimens cannot be produced without careful attention and nothing looks worse than a bunch of poor sickly plants.

Those who have porch plants in the summer time and cannot care for them in the winter should prune them quite severely, place them in a cool, dry cellar and forget about them until early spring. In the spring a little water, possibly a repotting, and regular attention will give them a good start.

The Fisher

(CONTINUED FROM PAGE 346)

and attack, and viciously destroy, his marten brother as readily as he would a red squirrel or weasel.

The fisher also enjoys the reputation of being one of the few animals of the forest capable of solving the mysterious defenses of the porcupine. Waiting till Quills hits the ground, the wily fisher quickly inserts a powerful forepaw under him and with a sharp jerk flops him over on his back. The tender, white flesh of the gnawer's belly is the only portion that suits his particular palate, and he leaves the rest of the banquet for less fastidious eaters.

A fisher-marten has a voracious appetite, consuming in a single night's hunt great numbers of red squirrels, white-footed mice, and partridge. Indeed, so effective is his blockade of fur and feather that an experienced woodsman can, at times, identify the proximity of fisher country because of the entire absence of chattering squirrels and drumming partridges.

Two-toed Sloth

(CONTINUED FROM PAGE 350)

structure making it almost helpless on the ground.

When it wishes to rest, the sloth rolls itself into a ball and is very inconspicuous among the mosses and lichens owing to its dull-grayish color. It is aided in concealing itself by the fact that the hair on its back often has a greenish tinge, this color being almost unknown among mammals, and due in this instance to an alga, the growth of which is promoted by the dampness which pervades the tropical forests. Sloths have but one young at a time, and this is carried about by the mother in her inverted travels until it is able to climb.

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(*Gen.* indicates a general article; *illus.*, a photograph or drawing; *rev.*, a review)

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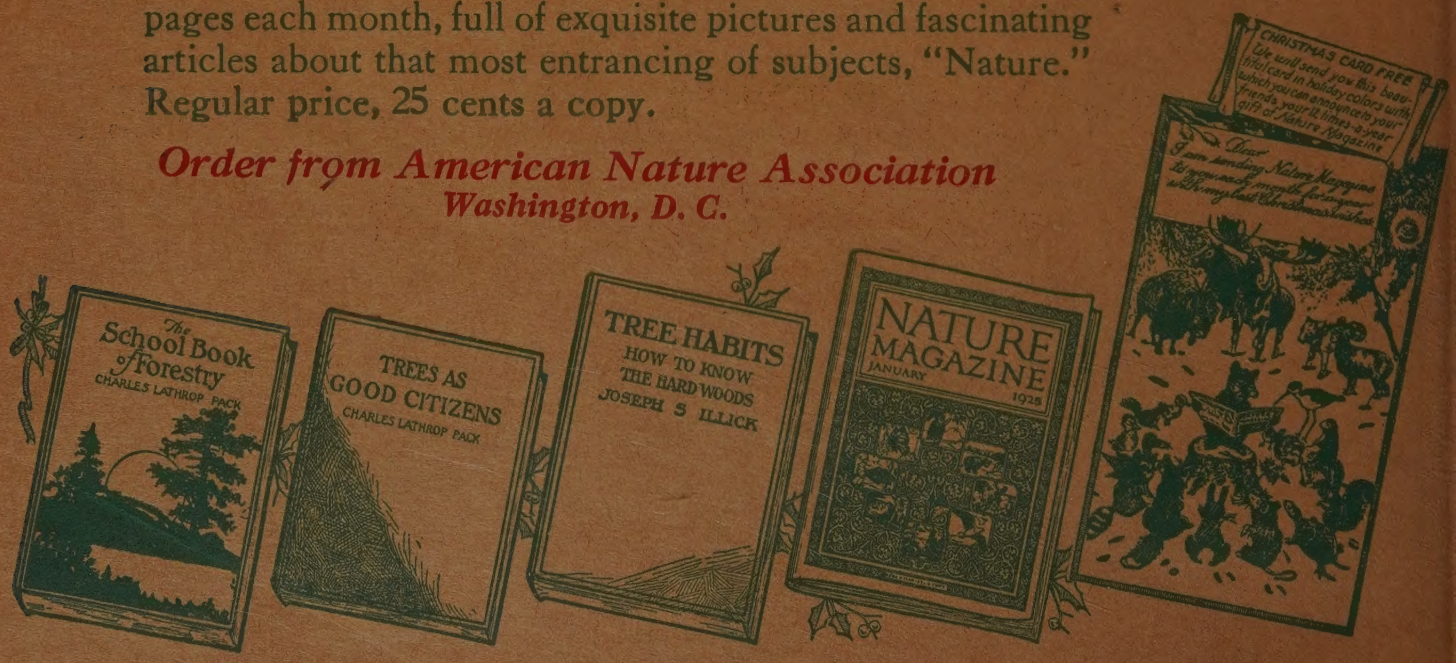

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